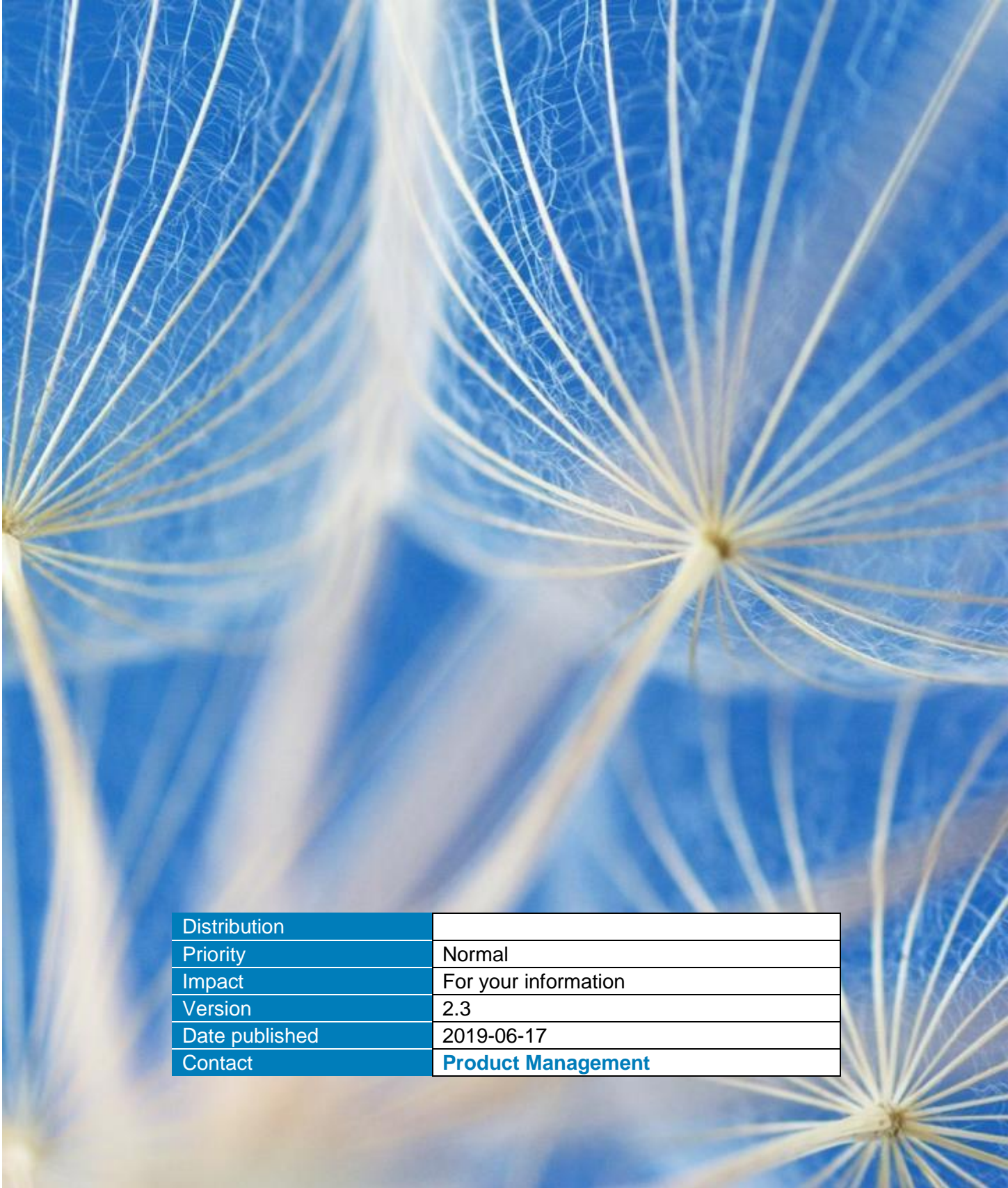


EuroCCP Service Overview



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1.7	January 2017	<ul style="list-style-type: none">• Added shareholder - Euronext• Added direct membership of the Norwegian Central Securities Depository and Central Bank.• Update funding procedure for Denmark and Norway	EuroCCP
1.8	February 2017	<ul style="list-style-type: none">• Added SIX Swiss Stock Exchange• Added direct membership of the Austrian and German Central Securities Depository	EuroCCP
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2.1	January 2019	<ul style="list-style-type: none">• General update following yearly review	EuroCCP
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2.3	June 2019	<ul style="list-style-type: none">• Direct debit for strange nets becomes mandatory	EuroCCP

1. Preface

1.1. Document information

This document provides an overview of European Central Counterparty N.V.'s (EuroCCP) services and its processing procedures.

It is not intended to serve as a legal document. EuroCCP's services are provided in accordance with the terms of EuroCCP's Clearing Rule Book (CRB) and its Regulations, in effect from time to time, which are subject to change. Current versions of EuroCCP's CRB and Regulations are available on EuroCCP's website at www.euroccp.com.

EuroCCP's services and processes described in this document include:

- Membership, application process and Participant setup;
- Risk Management;
- Operational processes;
- Account structure;
- Information technology infrastructure;
- Business contingency and security plans.

2. Introduction

2.1. About European Central Counterparty N.V.

EuroCCP is a central counterparty (CCP) that supports pan-European securities trading. By delivering efficient post-trade processing and robust risk management at low cost, EuroCCP seeks to offer the highest value clearing and settlement services in Europe. Currently, EuroCCP clears more than 8,000 securities. EuroCCP is a pan-European CCP, which operates on a restrained profit model.

Through novation, EuroCCP substitutes itself for all counterparties that use its services, becoming the buyer to each seller and seller to each buyer, thus assuming counterparty risk for its Clearing Participants and ensuring settlement of trades in the event of Clearing Participant failure. EuroCCP processing also ensures anonymity for all parties from the onset of a trade through clearing and settlement thereafter.

EuroCCP provides clearing and settlement services for a number of platforms including:-

Aquis	Euronext Growth Paris
BlockMatch	Euronext Lisbon
Borsa Italiana Equity MTF	Euronext London
Cboe Europe Equities	Euronext Paris
Equiduct	London Stock Exchange
ETFplus Market	Mercato Telematico Aziionario (MTA)
Euronext Access Brussels	Morgan Stanley MTF
Euronext Access Lisbon	Nasdaq Copenhagen
Euronext Access Paris	Nasdaq First North
Euronext Amsterdam	Nasdaq Helsinki
Euronext Block	Nasdaq Stockholm
Euronext Brussels	Oslo Børs
Euronext Dublin Atlantic Securities Market	Sigma-X
Euronext Dublin Enterprise Securities Market	SIX Swiss Exchange
Euronext Dublin Main Securities Market	Turquoise
Euronext Growth Brussels	UBS MT
Euronext Growth Lisbon	

EuroCCP also clears over-the-counter (OTC) European cash equities trades provided by matching platform, Traiana.

EuroCCP is a company with limited liability ("*Naamloze Vennootschap*") established in Amsterdam and owned by 5 shareholders. EuroCCP is registered in the commercial register of the Netherlands Chamber of Commerce under number 34268194. Each of the following companies hold a 20% stake:

- ABN AMRO Clearing Investments B.V.
- Cboe Europe Limited
- DTCC Global Holdings B.V.
- OMX AB
- Euronext N.V.

3. Service Overview

3.1. Service offering

EuroCCP provides a full range of CCP services, including novation, gross trade netting, risk management and settlement. These services are tailored to client needs, through regular consultation with clients and market requirements and ongoing investment in our systems, operations and legal framework. This has led to our wide range of arrangements across various markets, trading venues, products and clients.

Our CCP services include:

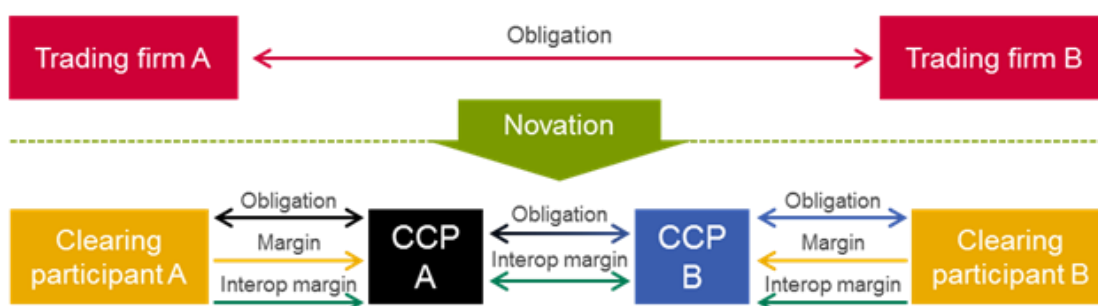
- Trade receipt & validation
- Trade transformation and novation / open offer
- Trade & settlement netting
- Position management
- Settlement services (with a combination of directly operated accounts and EuroCCP accounts operated on our behalf by local providers)
- Risk management
- Default management
- Reporting

3.2. Clearing arrangements

The trading venues serviced by EuroCCP decide on the clearing arrangement for trades executed on their trading venue. EuroCCP distinguishes 3 types of clearing arrangements.

1. **Interoperability:** Trading venues offering interoperability arrangements allow clearing participants to consolidate all their activity with their CCP of choice. This enables those firms that have selected EuroCCP as their CCP of choice to fully net their trades into only one net-settlement per ISIN per day. This is possible thanks to the creation of an obligation between the interoperating CCPs when both sides of the transactions have clearing participants opting for a different CCP. The resulting inter-CCP settlement costs and inter-CCP margin (also called interoperability margin) are passed onto the clearing participants, however these cost are outweighed by the benefits of clearing and netting all activity within one CCP.

Interoperability model with two interoperating CCPs

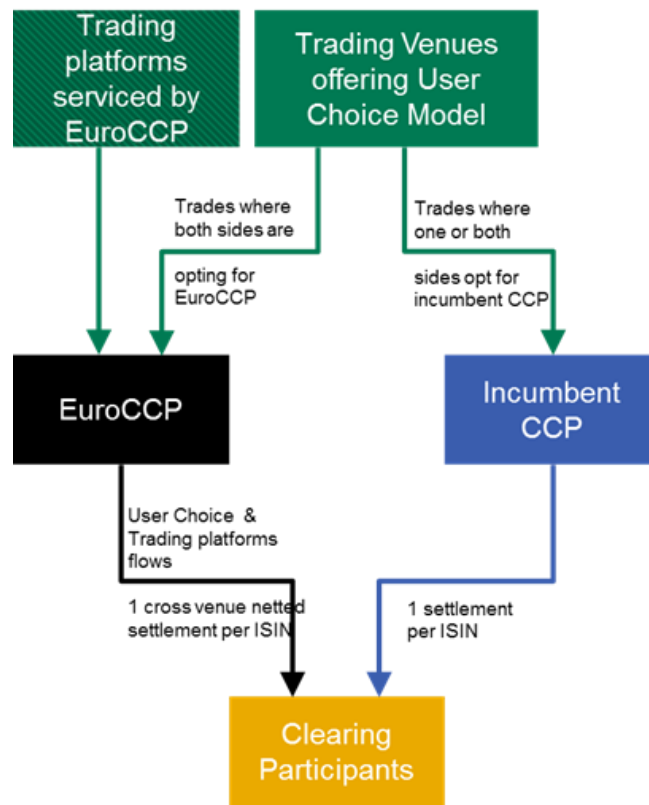


- User Choice Model:** the User Choice Model allows clearing via EuroCCP when both sides of the transaction are undertaken by clearing participants having selected EuroCCP as “preferred CCP”. These trades can then be netted against the activity executed on other platforms supported by EuroCCP for settlement purposes, thus not causing additional settlement costs.

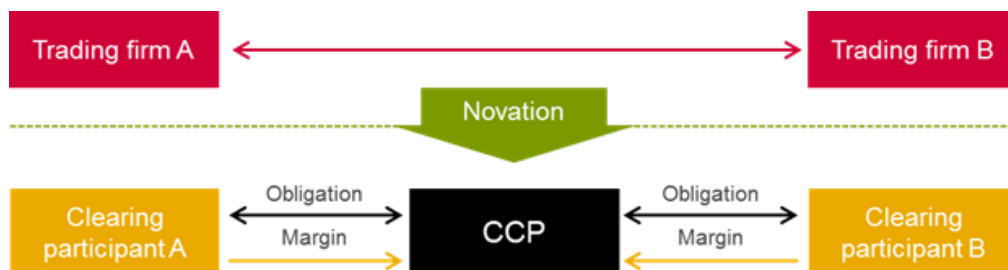
The transactions where both or one side of the transactions are undertaken by clearing participants who have not selected “EuroCCP as preferred CCP” both sides of the transaction will be cleared by the incumbent CCP.

The User Choice model is one step towards full interoperability, allowing EuroCCP’s clearing participants to already benefit from EuroCCP ‘s competitive fee schedule and economy of scale for a part of their activity.

This model is currently available for Equiduct (French, Belgian, Dutch and Portuguese instruments), Borsa Italiana and the following Euronext markets: Euronext Access Brussels, Euronext Access Lisbon, Euronext Access Paris, Euronext Amsterdam, Euronext Brussels, Euronext Growth Brussels, Euronext Growth Lisbon, Euronext Growth Paris Euronext Lisbon, Euronext London, Euronext Paris



- Sole CCP model:** all trades executed on the platform are cleared by one CCP.



3.3. Market Model

The market model is based on a strict decoupling of trading rights, clearing rights and settlement rights.

There are multiple market participants in the trading, clearing and settlement landscape connected to EuroCCP, which are responsible for the majority of the European equity trading activities. These market participants can either connect directly to EuroCCP (to become a Direct or a General Clearing Participant), or use an intermediary (a General Clearing Participant) to facilitate usage of the clearing services.

Settlement for each market segment will take place in the (i)CSD (e.g. Euroclear Nederland, Belgium and France, Euroclear UK & Ireland, SIX SIS, Clearstream Banking Frankfurt, Clearstream Banking Frankfurt International, VP Securities, VPS, Euroclear Sweden, Euroclear Finland, Monte Titoli, Iberclear, Interbolsa, OeKB, KDPW, CDCP, Keler and Euroclear Bank.)

3.4. Market Participants

Market participants for this clearing model include:

Participant type	Trading venue participant	EuroCCP Participant	Description
Trading Participant (TP)	YES	NO	Executes trades on the trading platform(s). Clears through a GCP.
Direct Clearing Participant (DCP)	YES	YES	Executes trades on the trading platform(s). Clears its own business and that of its clients(if applicable).
General Clearing Participant (GCP)	YES or NO	YES	May execute trades on the trading platform(s). Clears its own business, that of its clients and may clear for third party trading firms (TP).

4. Membership

4.1. Membership Requirements

The following entities are eligible to become a Clearing Participant, provided approval is obtained from EuroCCP's Supervisory Board, Credit and Risk Committees:

1. Credit Institutions and Banks established in a jurisdiction that is a member of the Financial Action Task Force (FATF);
2. Investment firms established in a jurisdiction that is a member of the FATF;
 - a. legal entities whose members or shareholders have unlimited joint and several liability for their debts and obligations, provided that such members or shareholders are institutions or firms mentioned under (a) and/or (b) above; and
 - b. legal entities in a jurisdiction that is a member of the FATF and whose principal or sole object is the clearing of financial instruments.

In order to clear trades, a Direct Clearing Participant must at all times maintain such capital that is the greater of:

- (a) EUR 7,5 million Capital; or
- (b) 20% of 30-day average Aggregate Margin requirement; or
- (c) 20% of 250-day average Aggregate Margin requirement.

In order to clear trades, a General Clearing Participant must at all times maintain such capital that is the greater of:

- (a) EUR 25 million Capital; or
- (b) 20% of 30-day average Aggregate Margin requirement; or
- (c) 20% of 250-day average Aggregate Margin requirement.

In the case of business combinations, the minimum Capital shall be determined by adding the Capital of each Person in such combination which is jointly and severally liable, and subtracting any cross-shareholdings between such Persons. The total Capital must at all times be at least equivalent to the minimum amount set forth in these Clearing Rules.

Entities based outside the EEA must demonstrate through a legal opinion that EuroCCP's Rules and Regulations will apply to the relationship and that EU settlement finality rules will apply to the contractual relationship, including in default events. In practice, EuroCCP only has EEA Clearing Participants.

4.2. Membership Documentation

When a membership application has been granted, Clearing Participants are obliged to sign legal agreements with EuroCCP. Detailed below is a full list of legal agreements, along with a brief description of each:-

- Clearing Participant Agreement.
This is a standard agreement which all Clearing Participants are required to sign. A personalised copy is couriered to all prospective members.
- Pledge over Collateral Agreement.
All Clearing Participants must deposit daily margin with EuroCCP (minimum 70%). There are different options depending on the client's preference;
 - a) An account with EuroCCP into which the daily margin requirement can be deposited, which should be at least 70% of the total daily requirement, in either cash and / or bonds.
 - b) For the remaining 30%, clients can open an account with one of the following collateral agent banks: Euroclear Sweden AB, Nordea Bank, SEB Bank, VP, Clearstream Bank or with EuroCCP.
- Financial Collateral Transfer Agreement.
This agreement should be signed if a Clearing Participant wishes to deposit bonds, given the requirement to deposit a certain percentage of its daily collateral requirement with EuroCCP.
- Pledge over (non) segregated Client Cash Collateral.
This agreement should be signed if a Clearing Participants wishes to deposit cash, given the requirement to deposit a certain percentage of its daily collateral requirement with EuroCCP.
- Tri-party / pledge agreements, where applicable, to allow for late trading activity.

(The above is in line with EuroCCP's Regulations and its Clearing Rule Book)

To assist with the set-up of a Clearing Participant's account, EuroCCP will also require:-

- Statement of Authority (SoA)
For each individual trading platform, clients must complete a Statement of Authority. These can be downloaded and completed via EuroCCP's website.
- Power of Attorney (PoA)
In order to allow EuroCCP to instruct the Settlement Agent's CSD Account on a Clearing Participant's behalf, a Power of Attorney must be signed by the parties involved in the settlement process. The use of a CSD Power of Attorney is mandatory for the Spanish market. PoA documents are available from the Legal section of EuroCCP's website at www.euroccp.com.
- Crest Static Data form
When trading UK and Irish stocks, a Crest Static Data form will be required. which is available from EuroCCP's website.
- Standard Settlement Instructions (SSI)
SSIs are required from each client to complete the account set-up process.
- Netting of executions
EuroCCP provides a variety of netting options according to a client's preference. The netting forms for all markets can be downloaded from EuroCCP's website.
- Testing
Should clients wish to undertake testing with EuroCCP prior to go-live, testing forms can be downloaded EuroCCP's website. Although testing is not mandatory, it is highly recommended. For the Spanish market, certification testing is mandatory.
- Authorisation for Transmission of OTC Transactions (If applicable).
- Clearing Fund Deposit
One business day prior to go-live, EuroCCP must receive a clearing fund deposit. A deposit form must be completed and returned via email, which can be downloaded from EuroCCP's website.
- Transferring / Depositing Collateral
When depositing and / or withdrawing collateral, clients may advise EuroCCP that email communications can be accepted from specific employees. Their details must be provided on a form, which can be download from EuroCCP's website. This form includes the standard payment and / or securities instructions when withdrawing cash and / or securities.

5. Risk Management Framework

The Risk Management department is responsible for all types of risk related activities at EuroCCP (Operational Risk, Market Risk, Credit Risk, Liquidity Risk) and for Business Control and Continuity.

5.1. Lines of Defence and Default waterfall

EuroCCP has reviewed the plausible sources of risk, both internal and external, and mitigates their impact through its Risk Model which incorporates appropriate systems, policies, procedures and controls. EuroCCP's Risk Model consists of five layers:-

1. Participation requirements – only authorised firms may join EuroCCP as a Clearing Participant.
2. Collateral (including a Clearing Participant's Interoperability Fund deposit and Clearing Fund Contribution) – EuroCCP requires Clearing Participants to meet margin requirements on their portfolio by depositing collateral at EuroCCP.
3. Skin in the game – EuroCCP will use its dedicated own resources before using the Clearing Fund contributions of non-defaulting Clearing Participants.
4. Clearing Fund – in the unlikely event that a Clearing Participant is declared to be in default and layers 2 and 3 are insufficient to cover the liquidation of the portfolio of the Clearing Participant, the Clearing Fund provides an additional buffer.
5. If the losses incurred cannot be covered by the collateral provided by the defaulting participant, the skin in the game and the aggregate amount of all Clearing Participant's contributions to the Clearing Fund (layers 2, 3 and 4), the non-defaulting Clearing Participants shall, on demand, make an additional payment to EuroCCP on a pro-rata basis in proportion to the amount of their Contributions to cover any such remaining losses (limited to an amount equal to the amount of their Contribution).

Layer 1 provides assurance that all Clearing Participants are reputable and authorised to operate as a Clearing Participant.

Layer 2 provides assurance that the portfolio of the Clearing Participant can be liquidated in the event of a default under normal or mildly extreme circumstances without additional costs to the non-defaulting Clearing Participants.

Layer 3 ensures that the CCP is incentivised to have conservative participation requirements and ensures a robust risk management framework.

Layer 4 provides assurance that, in the event that circumstances become extreme, there will still be sufficient funds to cover a potential default.

Layer 5 provides additional assurance in addition to the financial resources. The financial resources (layers 2, 3 and 4) should together be sufficient to withstand the stress tests. Layer 5 is therefore to be considered as a recovery tool rather than part of the financial resources.

5.2. Margin Criteria

As set out in the European Market Infrastructure Regulation (EMIR), margin requirements should cover the losses in a portfolio in at least 99% of all cases. Furthermore, EMIR requires that a CCP considers a number of factors when determining whether a 99% level is sufficient, or should be increased. EuroCCP's analysis and considerations in determining its confidence interval concludes that 99% is sufficient for a cash equity CCP such as EuroCCP. As its current shareholders have a risk tolerance corresponding to a confidence level of 99.7%, EuroCCP therefore uses a confidence interval of 99.7%.

The liquidation period used by EuroCCP for its margin calculations is three days.

Further information about EuroCCP's margin model is outlined in EuroCCP COH User Manual, which can be found at EuroCCP's website.

5.3. Trace

EuroCCP provides its Clearing Participants with TRACE, a real time web based tool on a free of charge basis. TRACE enables Clearing Participants to keep track of House and / or Client margin levels in real time. Further details can be downloaded from EuroCCP's web-site.

6. Operations

6.1. Central Securities Depository (CSD) connectivity

EuroCCP continuously monitors its activity at each CSD and Agent to which it has access. This includes the costs of a direct CSD connection and the settlement fees it is charged by its settlement agent or account operator. Whenever it becomes economically viable, and whenever possible by the CSD rules, EuroCCP will consider becoming a direct CSD participant. EuroCCP generally communicates with CSDs via SWIFT except where proprietary communication provides a significant reduction in the communication and / or connectivity costs.

EuroCCP operates its own direct membership with CSDs in Austria, Belgium, Denmark, France, Finland, Germany (including international segment), Ireland, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland, United Kingdom and Spain¹. Also EuroCCP operates its own securities account with Euroclear Bank for the settlement of cleared IDR securities. A settlement agent model is used for Czech Republic, Hungary and Poland.

In line with EuroCCP's commitment to improve efficiency for its clients and reduce costs EuroCCP is a Target2 Securities (T2S) certified Directly Connected Party (DCP) for securities and is authorised by Euroclear Belgium, France and Nederland, Monte Titoli for the Italian market, Interbolsa for the Portuguese market, Clearstream Banking Frankfurt for the German market, OeKB for the Austrian market, Iberclear for the Spanish market and VP securities for the Danish market.

6.2. Central Bank connectivity / funding

Connectivity

EuroCCP operates its own direct membership with Central Banks in Denmark, Finland, Netherlands, Norway, Sweden, Switzerland. EuroCCP is a T2S certified and Authorised Directly Connected Party (DCP) for cash via the Dutch Central Bank (Euro's) and Danmarks National Bank (Danish Kroner) and operates its own Dedicated Cash Account (DCA).

Funding

Each business day, EuroCCP's Treasury Team calculates the minimum funding requirements for each CSD where EuroCCP has direct access. Actual funding requirements are monitored directly in the CSD's system during the day and additional funds are transferred to a CSD if required.

Detailed below is an overview of the mechanics for each of the Central Bank accounts operated by EuroCCP:

- Denmark (DKK) – at the start of each settlement day in T2S, (settlement day +/- 1 at 19:30) the EuroCCP DCA will be funded from EuroCCP's Kronos account. At the end of each settlement day, around 16:30, any position is automatically transferred from the DCA to the Kronos account with Danmarks Nationalbank.
- Finland – at the start of each settlement day in Infinity, the EuroCCP's Internal Cash Account (ICA) will be funded from EuroCCP's Target 2 account. At the end of each settlement day, around 16:00, any surplus funds are transferred from the ICA to the Target 2 account.
- Austria, Belgium, France, Germany, Italy, Netherlands, Portugal, Spain (Euro) – at the start of each settlement day in T2S, (settlement day +/- 1 at 19:30) the EuroCCP DCA will be funded from EuroCCP's Target2 account. At the end of each settlement day, around 16:45, any position is automatically transferred from the DCA to the Target2 account.

¹ For further information about EuroCCP's service offering for the Spanish market, we would like to refer to the Service Description and Specification Spanish Market.

- Norway – the CSD sets a minimum settlement funding on a daily basis. At the start of each settlement day, the Norwegian Central Bank transfers the liquidity to EuroCCP's cash settlement account which allows DVP and RVP settlement within the CSD. At the end of each settlement day, around 12:15, any surplus funds are automatically transferred back to EuroCCP's NBO account.
- Sweden – the CSD sets a minimum settlement funding on a quarterly basis. Funding must be in place by 07:00 CET on each business day. On settlement day -/- 1, all necessary payments are instructed via SWIFT to fulfill this obligation from EuroCCP's Target 2 account. Funds are wired to the Bundesbank in favor of the Swedish Central Bank in favour of EuroCCP's sub account.
- Switzerland – the CSD does not set a minimum settlement funding nor a deadline for funding to be in place. EuroCCP therefore instructs a transfer from its Target 2 account on settlement day -/- 1.
- UK & Ireland – CREST does not set a minimum settlement funding nor a deadline for which funding should be in place. The settlement process stops when liquidity becomes insufficient and resumes when sufficient liquidity has been arranged. EuroCCP has arranged sufficient liquidity for CREST settlement via a CREST payment bank.

6.3. Pre-Settlement Matching

Wherever possible, EuroCCP follows local market practice for Pre-Settlement Matching, which differs across markets. When appropriate, EuroCCP has arrangements in place with its agent banks. Further details are available in EuroCCP's Regulation Settlement.

In the majority of the markets where EuroCCP offers a clearing service, Pre-Settlement Matching is automated within the CSD as soon as both instructions are instructed. In only two markets, manual pre-matching is required.

EuroCCP always follows market practice whenever possible and the binding or non-binding nature of matching is usually CSD dependent. Matched instructions are binding in all markets with the exception of:-

- Euroclear Bank (IDRs / US segment)
- Switzerland
- Sweden (for transactions in the pre-matching system)

Non-Matching

EuroCCP will proactively attempt to resolve non-matching transactions by:

- Providing members a daily overview (via the CIF-file) of all pending transactions including the matched or unmatched status of the trade. This report can also be distributed multiple times on an intra-day basis.
- Contacting members by email in the event of large unmatched transactions on S-1.
- Contacting members by phone in the event of unmatched transactions on S.
- EuroCCP also checks alleged information received from its CSDs, settlement agents and / or account operators.

6.4. Agent / Principal

Clearing Participants are able to allocate transactions to pre-defined accounts within the clearing system by using the Agent / Principal flag. Furthermore, Clearing Participants may opt for specific "netting" options. Should a Clearing Participant opt to segregate its Agency and Principal business, it can opt for full netting of its Agency business, but also can opt for directional netting (settlement instruction for the accumulated buys and a separate settlement instruction for the sells). A Clearing Participant can also post all Agency and Principal trades within one account with the option to generate

separate settlement instructions for its Agency and Principal business. The Agent and Principal indicator will also be communicated to CREST / EUI to support an optimal direct input process (if the Clearing Participant opted for direct input, otherwise matching needs to be performed by the Clearing Participant).

6.5. Partial settlement

Partial settlement i.e. settling only a part of the original quantity or amount when full settlement is not possible due to lack of securities or cash. This process is supported through automated functionality offered by the settlement system which is operated by the local CSD or by manual intervention of the settlement process. The partial process comes in many forms with the ultimate same goal of improving settlement efficiency by reducing the value of the original trade consideration and quantity outstanding. Below are some of the various partial processes being offered that EuroCCP use.

6.5.1. Automated partial settlement

EuroCCP supports the automated partial functionality offered by the respective settlement platforms (e.g. T2S and Crest in the UK market). EuroCCP requires its Clearing Participants to use the partial indicator PARQ in T2S. This partial indicator specifies that partial settlement is allowed and the quantity threshold, which is set at one in most markets. Crest automatically applies partial functionality in the UK market on all CCP transactions in order to increase settlement efficiency using members' account static, to switch this on or not, indicators. It is mandatory for all CCP transactions to have partialing turned on and Crest oversees this set up using CCP services.

6.5.2. Auto-Splitting

The Swiss CSD, SIX SIS, offers an auto-split functionality for CCP settlement instructions under a Power of Attorney (PoA), which allows a CCP to settle the available positions during a number of auto-split cycles throughout the day. This will ensure that clients maximise settlement efficiency, by allowing EuroCCP to release the largest position available to the market after each auto-split batch.

SIX SIS also offers its Clearing Participants the option to release available stock at their own discretion outside the partial window into the CCP by sending an MT530 or instructing from its GUI, resulting in the CSD's system automatically partialling the instructed quantity to the CCP.

6.5.3. Manual splitting

EuroCCP offers a partial settlement process, where EuroCCP and its Clearing Participants can send split requests to each other. Split requests will only be accepted in accordance with the published deadlines outlined in EuroCCP's Regulation Settlements. EuroCCP strongly encourages clients to implement Settlement agent or CSD POA arrangements to improve settlement and back-office efficiencies.

It is a mandatory requirement that Clearing Participants follow the instructions to cancel and / or re-instruct, issued by EuroCCP in respect of the partial settlement process.

6.6. Failed settlements

If settlements fail to settle, these failed settlements are reported in the daily CIF file, together with other reports. Large failed settlements are monitored by EuroCCP's Operations department, which will contact the delivering party for timely delivery.

EuroCCP's Fail management fees are outlined its Regulation Fees and Penalties, which is published on its website.

6.7. Buy-in

For Buy-Ins, EuroCCP follows European Short Selling Regulations which were introduced on 1 November 2012.

EuroCCP's approach to a buy-in, as the formal counterparty to all transactions, is to honour, wherever possible, the original rights or entitlements resulting from Trades undertaken on an Exchange (or via OTC) and cleared by EuroCCP, when one of the parties involved fails to meet its settlement obligations. EuroCCP has chosen to follow local market practice as closely as possible, whilst aiming for a harmonised pan European process. The rules are set up in a standard structure to create transparency and enhance processing efficiency.

EuroCCP offers its Clearing Participants a daily "Fail" report, which provides Clearing Participants with details of all failed settlement obligations and the respective buy-in dates from ISD+1. This will allow a Clearing Participant to easily identify when securities will be required to ensure timely settlement and prevent a buy-in.

Further details can be found in EuroCCP's Regulation Buy-In and Buy-in Report Specifications (BIR) which are published on EuroCCP's website.

6.8. Corporate Actions

Corporate Action information is received from Data Vendors, CSDs and Settlement Agents. Checks are performed on a daily basis and, depending on the corporate event, different actions are undertaken with Settlement Agents and / or Account Operators, CSDs, and Clearing Participants.

EuroCCP will receive all corporate action notifications from CSDs and their agents via SWIFT MT564 messages which are uploaded into EuroCCP's systems and are the main source for corporate action processing.

As a second source, EuroCCP uses a data provider which provides a daily overview of all corporate events taking place in the stock universe cleared by EuroCCP.

Further details can be found in EuroCCP's Regulation Corporate Actions which is published on its website.

6.9. Settlement instructions authorisation

EuroCCP offers a service whereby it creates and sends settlement instructions on behalf of the Clearing Participant to:

- a) the local CSD - via a 'CSD POA'; or
- b) a Clearing Participants' Settlement Agent, via a 'Settlement Agent POA'.

The use of POA functionality is encouraged wherever possible to assist clients settlement efficiency.

6.9.1. CSD Power of Attorney

The CSD Power of Attorney (CSD POA) enables EuroCCP to manage the settlement obligations on behalf of Clearing Participants at the Central Securities Depository (CSD). EuroCCP accommodates the different settlement models by making use of the different functionalities on offer from the CSDs and incorporate this into a single service offering to its Clearing Participants. The CSD POA is available for settlement instructions in Euroclear UK & IE, Switzerland and the T2S markets.

The CSD POA is mandatory for activity that settles in the Spanish CSD and activity from the Swiss Stock Exchange.

In order to provide this service, the Settlement Agent and the Clearing Participant must sign the Authorisation document (CSD POA) which enables EuroCCP to send the settlement instructions to the CSD on the Clearing Participant's behalf for settlements between the Clearing Participants' Settlement Agent and EuroCCP.

6.9.2. Settlement Agent Power of Attorney

Under the Settlement Agent POA settlement service, EuroCCP can send the settlement instructions (“on behalf of the Clearing Participant”) to the Clearing Participant, their Settlement Agent or the Central Securities Depository. The Clearing Participants’ settlement instructions are “opposite” to EuroCCP’s settlement instructions, and will be instructed to the CSD at the same time as EuroCCP’s instructions.

Should a Clearing Participant requests EuroCCP to send their settlement instructions to the Clearing Participant / Settlement Agent, the Clearing Participant must sign the Statement of Authority mirror settlement instructions.

SWIFT communication charges for the mirror instruction will be debited to the Clearing Participant or Settlement Agent by SWIFT. Charges will depend on the commercial agreements between the Clearing Participant and / or Settlement Agent bank with SWIFT.

The Settlement Agent POA is mandatory in the Swedish market.

6.10. Direct Debit

EuroCCP offers a Direct Debit cash collection facility to its Participants, which will further enhance the operational and risk process between EuroCCP and its Clearing Participants. The Direct Debit functionality allows Participants to have their cash obligations instructed directly to their cash Correspondent Banks. The benefit of this service is to allow for an STP process of cash payments related to their operational and risk activities.

Customers have the choice to subscribe to the Direct Debit functionality for their operational activities and / or risk related activities:

- Cash collection settlement netting results in a “strange net” (Mandatory requirement).
- Cash collection of monthly fee invoices (Mandatory requirement).
- Cash collection daily margin requirement.
- Cash collection regarding Corporate Events.

Procedure:

To implement the facility, a Direct Debit application form must be completed and testing with the Correspondent Banks is required.

6.11. Netting results

Multilateral netting will result in one of the following nine outcomes:

		Stock movement	Cash movement
1	“Regular” purchase	Receive	Deliver
2	“Regular” sale	Deliver	Receive
3	Delivery with payment	Deliver	Deliver
4	Receive with payment	Receive	Receive
5	Deliver stock with no cash	Deliver	0
6	Receive stock with no cash	Receive	0
7	Deliver cash but no stock	0	Deliver
8	Receive cash but no stock	0	Receive
9	No stock or cash movement	0	0

Clean Nets

Scenarios 1 and 2 are commonly referred to as “clean nets”, which account for 96% of all netting results.

Strange Nets

Scenarios 3 to 9 are referred to as “strange nets”. Strange nets can settle as follows:

- Through a Delivery With Payment (DWP), Receipt With Payment (RWP) or Payment Free of Delivery (PFOD) instruction type. These instruction types are supported in markets that migrate to T2S.
- The original single net will be unwound and replaced with an aggregation, or directional net (i.e. aggregation of longs and shorts), or
- In the event of scenario 3, 4, 5 and 6, the Clearing Participant can opt for a Free Of Payment (“FOP”) with or without a separate cash payment (scenario 5 and 6). For scenario 7, 8 and 9, the Clearing Participant can also opt for cash settlement. As a consequence, no settlement instructions will be communicated to the CSD, and the (netted) cash involved will be settled on contractual settlement date between EuroCCP and its Clearing Participant by means of an external cash payment.

This is a choice made by the Clearing Participant on the Clearing Participant Information and Application form (see also 4.2). If required, these settings can be amended at any time by the Clearing Participant, which also applies for all settlements.

7. Account structure

7.1. Principal to principal relationship

EuroCCP maintains a principal to principal relationship with Clearing Participants, as is customary for CCPs in common and civil law jurisdictions. The clearing rules do not create a contractual relationship between EuroCCP and the underlying clients of the Clearing Participant.

Consequently, from a Dutch legal perspective, the designation of position and collateral accounts in the books of EuroCCP, as segregated omnibus or individual client accounts only, supports administrative segregation and does not identify or record ownership.

7.2. Types of collateral account

EuroCCP distinguishes three types of collateral accounts in its books:-

1. Cash collateral accounts;
2. Accounts reflecting the securities transferred to EuroCCP as collateral;
3. Collateral accounts held with third parties, pledged to EuroCCP, which are “reflected” in its administration systems.

EuroCCP requires that a certain minimum percentage (currently 70%) of required margin is held directly with EuroCCP in either account type 1 & 2. House, omnibus client and individual segregated client position accounts will be separately margined and the required collateral must be held in a linked collateral account. However, EuroCCP requires that the minimum percentage be held at the overall Clearing Participant level. Consequently, a Clearing Participant may decide to hold the client collateral accounts with third parties (type 3). The Clearing Participant must then ensure that the overall collateral amount which must be placed with EuroCCP directly, is held in a house collateral account of type 1 or 2. This reduces the number of additional accounts required and allows the Clearing Participant to manage its exposure to its clients.

However, should a Clearing Participant wish to hold the 70% requirement separately for the client account(s), it can request the opening of client collateral accounts (type 1 or 2) with EuroCCP to ensure that the 70% is held for each segregated client.

7.3. Options for Clearing Participants and their customers

EMIR requires a minimum segregation for House and Client business.

Clearing Participants and their customers will have the option to maintain this setup, where client positions are commingled together, or to fully segregate a client account from other client accounts.

Some clients of a Clearing Participant may choose to be individually segregated, while others may choose to remain in an omnibus account.

7.4. Individual client segregation

Under this option, the client position account will be fully segregated. The impact of this option is that the segregated client position account will be margined and settled separately from other accounts and will therefore not benefit from any cross client netting opportunities at margin or settlement level. A segregated individual position account will also require posting of the necessary collateral in (a) segregated collateral account(s). In the event of a Clearing Participant default (an enforcement event under the pledge), any unused collateral remaining after completion of the default procedures will remain in this account.

If individually segregated client collateral is held in EuroCCP's books, (type 1 or 2), EMIR requires that collateral balances owed by EuroCCP after completion of default procedures, i.e. unused collateral, shall be readily returned to the client if known to EuroCCP. Because of potential friction between EMIR and insolvency law, EuroCCP will require a pledge agreement with the Clearing Participant as pledgor and the client as pledgee to protect the interest of the client(s) involved and EuroCCP. In the absence

of such arrangements, payment of residual collateral will only be made with the express consent of the insolvency practitioner of the defaulting Clearing Participant.

7.5. Omnibus client account

Under this option, the client account will be fully segregated from the house account, but the positions of the non-segregated clients are commingled, which is the minimum level of segregation required under EMIR.

This option will be more economical, in terms of total margin required, settlement costs and number of collateral accounts required. The account will have a single margin call and will therefore benefit from margin netting across all clients within the account.

It will also be possible to settle on a net basis across all the Clearing Participant's clients. The omnibus client position account will also require at least one new omnibus client collateral account (either type 1 or 2) to be held with EuroCCP, if the Clearing Participant does not choose to meet the 70% requirement in full through the house collateral account.

A new third party collateral account (type 3) can also be held and pledged to EuroCCP. In the event of a Clearing Participant default (which is an enforcement event under the pledge), any unused collateral remaining following the completion of the default procedures will remain in this account.

Balances owed by EuroCCP after completion of default procedures, i.e. unused collateral, will be returned to clients if known to EuroCCP. Because of potential friction between EMIR and insolvency law, we will require pre-arranged procedures with a trustee acting on behalf of the joint clients, a pledge agreement with the Clearing Participant as pledgor and the client (trustee) as pledgee, together with a clean legal opinion in order to protect the clients and EuroCCP. In the absence of such arrangements, payment of residual collateral cannot be made to the clients directly.

It should be noted that EuroCCP will close out the omnibus client positions at an aggregated level and not per underlying client (if the positions are segregated in this manner). EuroCCP will be unable to attribute the enforced part of joint collateral holdings to any particular position, as collateral will cover the net result of the close out netting process.

7.6. Clearing fund and interoperability fund

EuroCCP maintains a clearing fund account and an account for deposits in the EuroCCP interoperability fund for each (interoperable) Clearing Participant. These accounts are held at the level of the Clearing Participant and cannot be held on a segregated basis for one or more clients.

8. Information technology infrastructure

EuroCCP has a fully independent IT infrastructure that is exclusively used for EuroCCP's operations. It is housed in independent third party secure datacentres.

Trading venues connect to EuroCCP through BT Radianz connections, although smaller venues and OTC trade sources may connect via VPN. Connections are maintained to EuroCCP's primary (production) and secondary (DR) datacentres. Trades are received by the FIX Server production cluster in real time.. This server also runs the "Trade Validation Software (TVS)" module that validates all incoming trades and sends back confirmations to trading venues and Clearing Participant's in real time.

Following validation, trades are forwarded to the central netting and settlement system (CF), which operates on a real time basis. For those trades that cannot be validated, EuroCCP will immediately confirm a reject message to the trading venue. The error-trade will be shown in TVS for potential error handling by EuroCCP's Operations department. If the error is due to a static data error caused by EuroCCP, EuroCCP will input the required static data, resulting in an automated repair and acceptance message to the trading venue. If the error was not due to a static data error caused by EuroCCP, EuroCCP will establish and discuss the reason and potential resolution with the trading venue.

Trades are forwarded from CF to the Risk Management server on a real time basis. This Risk server calculates positions and margin requirements in near real time (real time price and new trade updates, with settled positions updating every few minutes) and is used by EuroCCP's Risk Management department throughout the day. It also calculates the overnight margin calls in the end of the day Risk batch. The central netting and settlement system also sends out settlement instructions to CSDs via SWIFT systems at approx. 19:30 CET on trade date. It also receives and processes incoming settlement confirmations and settlement status messages in real time.

At the end of the day – after trading hours – the central netting and settlement system runs a daily batch. This batch generates reports that are sent to Clearing Participants. The Risk Management system also runs an end-of-day batch to generate Risk reports for Clearing Participants. All reports are sent to Clearing Participants at the end of the batch, early in the evening through the Email and FTP server.

8.1. Processing and deadlines

EuroCCP's systems start at 06:00 CET. Real-time settlement processing then starts, and the different settlement statuses distributed by Settlement Agents and CSDs of the previous evening are processed.

Trading venues are able to connect as from 07:00 CET.

Trading venues provide EuroCCP with the End-of-Day / Reconciliation files after trading activity closes. As soon as the End-of-Day / Reconciliation files are received, EuroCCP starts the reconciliation process which normally concludes at 20:00 CET. Thereafter, EuroCCP will distribute settlement instructions to the Settlement Agents/CSDs.

The End-of-Day batch starts at approximately 20:30 CET. Clearing Participants receive the End-of-Day CIF files at approximately 21:00 CET. Settlement results are reported in the CIF file, sent each business day, or intraday, upon a Clearing Participant's request. More detailed information can be found in the CIF specification which can be downloaded from EuroCCP's website.

8.2. Test capabilities

EuroCCP operates a dedicated client test environment that is fully synchronized with the production environment, on a free of charge basis. Separate test environments are used for IT testing and regression tests. EuroCCP does not mandate testing by its Clearing Participants and leaves them to determine the amount and type of testing required. However, in some instances, EuroCCP requires Clearing Participants to test certain test cases (e.g. implementation of a new settlement system). Clearing Participants that wish to test with EuroCCP need to complete a EuroCCP test form. Full testing is available between 9.00 CET and 17.00 (CET). At 17.00 CET, EuroCCP will run the test batch and participants will receive the test output at approximately 18.00 CET. These timings can be adjusted by

mutual agreement to support Client requirements. EuroCCP supports a full range of testing, including the routing of settlement instructions to the local CSD (if supported by the CSD).

9. Reporting

9.1. Gross trade reporting options

EuroCCP is able to provide its participants with real-time executions (format: FIX or MT 518) as soon as an execution is novated. This service can be offered via a connection through BT Radianz or a VPN-line.

9.2. Intraday reporting

EuroCCP offers intra-day reporting to its participants. Intra-day reports are available via (S)FTP. Further details can be found in the CIF file specifications, which can be downloaded from EuroCCP's website. The intraday files are usually generated three times a day at 11:00, 14:00 and 17:00 CET. However, if required, EuroCCP is able to extend and schedule this to multiple times a day, e.g. with hourly delta CIF reports.

9.3. End of Day reporting

EuroCCP provides a full suite of reports to its participants, including margin reports, trade reports, settlement reports, netting reports and fees reports. Specifications of each of these reports can be found on EuroCCP's website. Clearing Participants will receive the End-of-Day files at approximately 21:00 CET.

10. Business Continuity Management

EuroCCP holds British Standards Institute Certification for: ISO22301:2012 Societal security – Business continuity management systems -Requirements.

The Business Continuity Management System is part of EuroCCPs Control Framework Management System. Management of EuroCCP is closely involved in the creation, implementation and maintenance of the Business Continuity Management System. In compliance with ISO 22301:2012 the Business Continuity Documentation Set consists of a range of documents covering the relevant chapters: 4 – 10 of the standard.

EuroCCP has created and implemented a rigorous meeting, training, testing and exercising program, in conjunction with external consulting companies, in order to enable the organisation to maximize its resilience in case of calamity.

10.1. Staff Business Continuity Awareness

EuroCCP staff members are obliged to participate in BC Awareness Sessions. New staff members receive the BC Awareness Session during their induction program.

10.2. Business Continuity Management Governance

The EuroCCP Risk Governance Board meets on quarterly basis to review progress of the BCM System, including documentation, business continuity arrangements, testing and training. A workshop focussed on improvement of the Management System is part of the standard agenda of those meetings. Minutes of the meetings are being documented by the Business Continuity Managers.

10.3. Crisis Management / Incident Management Trainings

Training is provided to the members of the EuroCCP Crisis Management and Incident Management Teams. Semi-annually, Crisis Management Team / Incident Management Team trainings are organised by a qualified third party supplier. Other staff trainings are organised by the Business Continuity Managers. Reports of the training activities, including Risks and Opportunities Actions & Corrective Actions are being documented by the Business Continuity Managers. Actions follow up are tracked through Business Continuity Management Governance.

10.4. Business Recovery Testing

Throughout the year the Business Continuity Managers organise tests to validate the resilience of the Business to recover within the internally agreed tolerance times for critical activities. The following tests are performed at a minimum: Staff Relocation Test, Everbridge BCM Communication Test (during and after office hours), IT Failover / Recovery Test, Remote Access & Disaster Recovery Test, UPS Test, Headcount Test. Further EuroCCP participates in industry and regulator organised tests. Reports are drafted, including Risks and Opportunities Actions & Corrective Actions by the Business Continuity Managers.

10.5. BCMS Continuous Improvement

As a result of all BCMS related activities, EuroCCP keeps track of Risks and Opportunities Actions & Corrective Actions. Further, the complete BCM system is subject to an annual Management Review and Internal and External Audits.

11. Cyber & Information Security Management

The Cyber & Information Security Management System is part of EuroCCPs Control Framework Management System. Management of EuroCCP is closely involved in the creation, implementation and maintenance of the Cyber & Information Security Management System, which is based on the NIST Framework for Improving Critical Infrastructure Cybersecurity and the CPMI-IOSCO Guidance on cyber resilience for financial market infrastructures.

11.1. Staff Cyber & Information (C&IS) Security Awareness

EuroCCP staff members are obliged to participate in C&IS Awareness Sessions. New staff members receive a C&IS Awareness Session during their introduction program.

11.2. Cyber & Information Security Management Governance

The EuroCCP Risk Governance Board meets on quarterly basis to review progress of the C&IS Management System, including documentation, Cyber & Information Security arrangements, testing and training. Minutes of the meetings are being documented by the Operational Risk & Control Managers.

11.3. Crisis Management / Incident Management Training

Training is provided to the members of the EuroCCP Crisis Management and Incident Management Teams. These trainings include Cyber & Information Security incident scenarios. Semi-annually, Crisis Management Team / Incident Management Team trainings are organised by a qualified third party supplier. Other staff trainings are organised by the Cyber & Information Security Managers. Reports of the training activities, including Risks and Opportunities Actions & Corrective Actions are being documented by the Cyber & Information Security Managers. Actions follow up are tracked through Cyber & Information Security Management Governance.

11.4. Cyber & Information Security Testing

EuroCCP participates in industry and regulator organised tests. Reports are drafted, including Risks and Opportunities Actions & Corrective Actions by the Cyber & Information Security Managers. Throughout the year EuroCCPs Information Security organise tests to validate the robustness of the IT Infrastructure and its users. This includes infrastructure and web penetration testing and red team testing.

11.5. C&IS Management System Continuous Improvement

As a result of all C&IS Management System related activities, EuroCCP keeps track of Risks and Opportunities Actions & Corrective Actions. Further, the complete C&IS Management System is subject to an annual Management Review and Internal and External Audits.