DEUTSCHE BÖRSE GROUP

T7 Release 6.0

Derivatives Markets

Participant Simulation Guide

Version	1.0
Date	19.09.2017

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Abstract

This document describes the timeline, new and changed features as well as simulation focus days for the T7 Release 6.0 Simulation. Derivatives trading participants should use this document to plan and prepare their T7 Release 6.0 simulation participation. If not announced specifically liquidity provision and focus days are offered exlusively for derivatives markest trading, except for T7/FX. This document should be read alongside the **T7 Release 6.0 Preliminary Release Notes**, all required technical interface descriptions, the regular **Simulation Calendar** and the regularly updated **Implementation News** on www.eurexchange.com > Technology.

Keywords

T7 Enhanced Trading Interface, T7 Enhanced Market Data Interface, T7 Enhanced Order Book Interface, T7 Extended Market Data Service, T7 Reference Data Interface, T7 FIX Gateway, Common Report Engine, T7 Trader GUI, T7 Admin GUI, GUI Administration and Restart, T7 Entry Services, T7

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Definitions and abbreviations

Term	Explanation
CEF®	Deutsche Börse Group Real Time Data Feed
CRE	Common Report Engine
EMDI	T7 Enhanced Market Data Interface
EOBI	T7 Enhanced Order Book Interface
ETI	T7 Enhanced Trading Interface
FIX	Financial Information eXchange protocol
FIXML	Financial Information Exchange Mark-up Language
ISV	Independent Software Vendor
GCM, DCM, NCM	General-, Direct-, Non-Clearing member
MDI	T7 Market Data Interface (netted)
TES	T7 Entry Services
T7	T7 trading system developed by Deutsche Börse Group
RDF	Reference Data File
RDI	Reference Data Interface
XML	eXtensible Mark-up Language

1. Simulation Overview

1.1 Introduction

The purpose of T7 Release 6.0 simulation is to provide an opportunity for participants and ISVs to become familiar with the new and enhanced functional and technical setup and features of T7 Release 6.0 and to prepare for production.

The key objectives of the T7 Release 6.0 simulation:

- Provide high quality information and simulation to support participant and ISV readiness.
- Familiarize participants with the new trading services functionality.
- Early identification of issues both from the Exchange and from the participants' side to minimize risk of T7 Release 6.0 launch and production operation.

The T7 Release 6.0 simulation execution is scheduled for the period from Monday, 25 September until Friday, 1 December 2017. From Friday, 8 September until 24 September 2017 the simulation will not be available due to maintenance and conversion to the Release 6.0. The production launch of T7 Release 6.0 is planned for Monday, 4 December 2017

The T7/FX Release 5.0 Simulation will be available until 19 October 2017. The conversion of the TT/FX simulation environment to Release 6.0 will be performed from 20 October to 24 October 2017 inclusive. The T7/FX Simulation Release 6.0 will be available from 25 October. The production launch for T7/FX Release 6.0 will be aligned with the other trading markets, effective from 4 December 2017.

The Extended Market Data Service (EMDS) for the T7 Release 6.0 Simulation will be available from 16 October 2017.

The exchange offers several dedicated focus days during the simulation phase to help participants become accustomed to new or changed features of T7. On those days, which are marked in the simulation calendar, special testing scenarios will be provided. This document describes the different test scenarios for the T7 Simulation.

The latest Simulation Calendar is always available on the Eurex website under the following path:

www.eurexchange.com -> Technology -> Simulation Calendar

A description of the new/changed functionality and technical enhancements has been communicated in the form of the document "T7 6.0 RELEASE NOTES" (one single document for functional and technical aspects in both, preliminary and final version), as well as Interface Specifications and User Manuals:

www.eurexchange.com -> Technology -> Eurex Exchange's T7 -> System documentation -> Release 6.0

1.2 Intended audience

This document serves as the guide for all derivatives markets simulation participants, i.e. current and future users of the T7 system. In particular, the following participants will be involved in the simulation:

- Exchange trading participants
- ISVs (Front, Middle and Back office)

In order to achieve a common understanding of the responsibilities and tasks, the distribution of this Simulation Guide to the appropriate project teams and line organizations of participants and ISVs is recommended as soon as possible. All parties involved, e.g. central coordinators, system administrators, traders and ISV representatives, should be aware of their tasks before the start of the simulation.

1.3 Timeline

Below the key dates concerning the introduction of T7 Release 6.0 are outlined.

• T7 release 5.0 to Release 6.0 simulation conversion	8 – 24 September 2017
• Start of T7 Release 6.0 simulation	25 September 2017
• Conversion of production environment 5.0 to 6.0	1 (eob)/2 December 2017
• Connection Test	2 December 2017
• T7 Release 6.0 production launch	4 December 2017

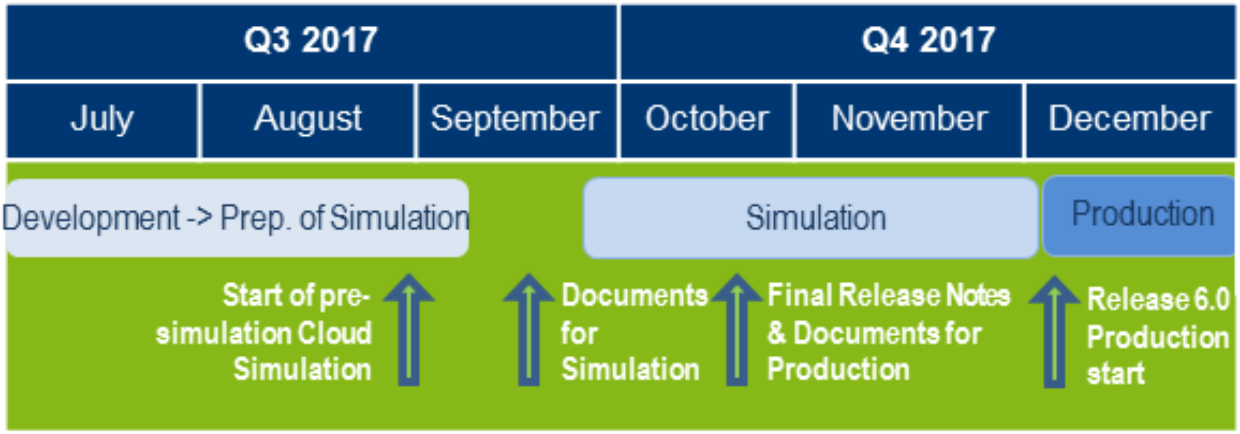


Figure 1: T7 Release 6.0 document publication and introduction timeline

Please Note: T7/FX will continue with Release 5.0 in simulation until Thursday, 19 October 2017. T7/FX will be down for maintenance and conversion and will open with Release 6.0 simulation from Wednesday, 25 October 2017. The production introduction for T7/FX will be aligned with the other derivatives markets, effective from 4 December 2017.

1.4 T7 Cloud Simulation

In addition to T7's release simulation participants can also use the T7 Cloud Simulation which allows trading participants and ISVs to test against the current T7 production and simulation environment. In this environment participants can initiate predefined market scenarios and test specific strategies more easily than in a shared environment. The T7 Cloud simulation is available 24/7 for a fixed price per hour and is accessible using an SSL-encrypted internet connection. The T7 Cloud Simulation will make a pre-simulation available for early adopters from end of August 2017. For more information on the T7 Cloud Simulation please refer to

http://www.eurexchange.com/exchange-en/technology/t7-cloud-simulation

1.5 Simulation calendar

During Simulation, the number of end-of-day batches vary between 2 to 3 times per week.

The Simulation Calendar is available on Eurex Exchange's website under the following path:

www.eurexchange.com -> Technology -> Simulation Calendar

1.5.1 Guiding principles for simulation calendar

- The simulation will be set up and run from both a functional and technical perspective as production-like as possible to help simulate business processes under realistic conditions. In order to provide a production-like system environment, the different T7 components will be set up as an integrated simulation environment. Nevertheless, system availability and technical performance will be scaled to simulation requirements and will differ from production.

- T7 release 5.0 permanent simulation will terminate with the end of day processing on 7 September 2017. The T7 simulation will not be available for participants and ISVs from 8 September until and including 24 September 2017 in order to prepare the T7 Release 6.0 simulation. Participants are encouraged to use the Cloud Simulation for testing purposes during this period, T7/FX will continue with Release 5.0 in simulation until Thursday, 19 October 2017. The Extended Market Data Service (EMDS) for the T7 Release 6.0 Simulation will be available from 16 October 2017.
- The T7 Release 6.0 simulation is planned to start on 25 September 2017 and will last for approximately nine weeks until 1 December 2017 (T7/FX Release 6.0 simulation start on 25 October). All functional and technical preparations should be completed before the start of the simulation.
- After the T7 Release 6.0 simulation has finished on 1 December 2017, the T7 Release 6.0 permanent simulation will continue in both environemnts.
- On batch days, calendar days correspond to actual business days. The following days until the next batch day have the business date of this forthcoming batch day. Here several calendar days (with 24 hours trading availability) constitute one business day.
- Weekends are generally open for simulation, but no technical and functional support will be available.
- In order to provide those participants and ISVs not located in a European time zone with the maximum possible access to the simulation environment, it is envisaged that the T7 Release 6.0 participant simulation back-end systems and network will be re-opened as soon as the batch has been successfully completed.
- Quarterly and monthly last trading/maturity & expiration dates for standard products are planned throughout the T7 Release 6.0 simulation. Details are listed in the Simulation Calendar.
- During the T7 Release 6.0 simulation, three month-end batches for September, October and November 2017 will be executed and month-end reports will be provided. Further month-end batches with the respective reports will be provided in T7 Release 6.0 permanent simulation from December 2017, onwards.

1.6 Liquidity for selected products in the simulation environment

1.6.1 Liquidity (bid/ask prices)

Liquidity (bid/ask prices) will be provided on each trading day throughout T7 Release 6.0 simulation in the following products:

Options

- **OESX** and **ALV**: only best bid, best ask
- **OGBL, OGBM** and **DB1**: Bid and ask prices with an order book depth up to 3
- **OTX**: Bid and ask prices with an order book depth up to 3
- **OTX1-OTX5**: only best bid, best ask
- **OKS2:** only best bid, best ask

Futures

- **FGBL**: Bid and ask prices with an order book depth up to 20
- **FESX:** Bid and ask prices with an order book depth up to 30
- **FTX**: Bid and ask prices with an order book depth up to 10
- **EVAR:** Bid and ask prices with an order book depth up to 3

Futures Calendar Spread orders

- **FESX**: Bid and ask prices with an order book depth up to 5
- **FGBL**: Bid and ask prices with an order book depth up to 10

Complex Instrument Types (in FEU3):

- **Packs:** 1st white pack
  1st red pack
  1st green pack

- **Bundles:** 2-year bundle and 3-year bundle

2. New and modified features introduced by T7 Release 6.0

T7 Release 6.0 will introduce the following important new enhancements for the derivatives markets:

2.1 Functional Aspects driven by MiFID II/ MiFIR requirements

In order to satisfy the regulatory MiFID II/ MiFIR requirements, Deutsche Börse AG will introduce several enhancements in the T7 trading system with Release 6.0.

2.1.1 Pre-Trade Controls

The MiFID II requirements for pre-trade controls for derivatives markets are:

- Price collar check, which prevents orders with a too large price difference to a reference price from entering the order book.
- Maximum order quantity validation, which prevents orders with a too large order size from entering the order book.
- Maximum order value validation, which prevents orders with too large order values from entering the order book.

The price collar check requirement is covered by the existing T7 price reasonability check and extended price range check. The maximum order quantity validation requirement is covered by the existing user transaction size limit functionality in T7.

2.1.1.1 Maximum Order Value Validation

With T7 Release 6.0, Participants will be able to set maximum order value limits for their users. The trading system calculates the value of each order entered into the order book and compares it to the maximum order value defined on user level. If the order value exceeds the defined maximum order value, then the order is rejected. With T7 Release 6.0, it will be possible to skip this validation for orders and quotes entered via ETI or FIX gateways. Orders entered via the T7 GUI will always be validated against the maximum order value limits.

2.1.2 Market depth

According to the pre-trade transparency regime that is introduced with MiFID II, the aggregated order book information needs to be published for at least the five best bid and offer price levels. With T7 Release 6.0, the market depth for derivatives products will be enhanced to five for all products and will be provided via netted and unnetted market data.

2.1.3 Market Making Handling

The MiFID II regulations regarding market making aim to introduce predictability to the apparent liquidity in the order book by establishing written agreements for investment firms pursuing market making strategies. Deutsche Börse AG will implement this requirement by an admission requirement for all trading participants who pursue a Market Making strategy according to Article 1 of Commission Delegated Regulation (CDR) (EU) 2017/578. Participants that receive an admission under these rules will be called Regulatory Market Makers. Regulatory Market Makers will be obliged to flag quotes and orders that are submitted under a market making agreement with a **Liquidity Provision Indicator**.

Furthermore, trading venues are obliged to provide market making requirements and incentives for certain products. These products will be marked with a new **Market Making Obligation flag** in T7. Cash and derivatives markets will provide a Liquidity Provider Framework, which will define the obligations of Liquidity Providers and the corresponding incentives.

The new regulatory relevant states of market conditions for market making will be **normal market conditions**, **stressed market conditions** and **exceptional circumstances**. Stressed market conditions will be established on product level, whereas exceptional circumstances will typically affect the whole market. The product will be in normal market conditions, when neither stressed nor exceptional market conditions apply. There are no market making obligations during exceptional circumstances.

2.1.3.1 Stressed Market Conditions

Stressed market conditions are characterized by significant short-term changes in price and volume. The resumption of trading after a volatility interruption is considered as a stressed market condition as well.

T7 will support a Stressed Market Conditions state on product level, although the trigger for Stressed Market Conditions (SMC) may be in a specific contract.

As the currently existing concept of Fast Market is closely related to the regulatory concept of stressed market conditions, the state Fast Market will be aligned into an overall state of stressed market conditions on T7. There will be two types of stressed market conditions in Eurex: **SMC-Fast** that corresponds to the current Fast Market state; **SMC-Auto:** automatically triggered stressed market conditions, which directly correspond to the regulatory concept of stressed market conditions**.**

Automatically triggered stressed market conditions will have a fixed duration (e.g. 10 minutes). Ongoing automatically set stressed market conditions will be prolonged by this time period, when the trigger conditions are detected again. The following trigger events for automatically set stressed market conditions will be supported, depending on the type of the affected product:

- Simultaneous significant change of price and volume – applies to equity index futures, single stock futures and ETF futures.
- End of a volatility interruption – applies to equity index futures, single stock futures and ETF futures.
- Stressed Market Signals in a related futures product – in case a futures product is in stressed market conditions and there is a corresponding options product with the same underlying, the options product will be automatically set in stressed market conditions. Note that a volatility interruption in such a futures product is considered as a stressed market signal. Such products are ETF options, equity options, equity index options.

During stressed market conditions, the maximum quote spread for quotes and Request for Quote requests is widened and the minimum quote quantity for quotes can be changed, i.e. the same behavior as for the current fast market conditions.

2.1.3.2 Exceptional Circumstances

According to the regulatory technical requirements, T7 has to support the state of exceptional circumstances under the following triggering conditions:

- Extreme volatility – a state of extreme volatility is established when the majority of products, which are subject to market making regulation are in stressed market conditions or in a volatility interruption.
  The state of extreme volatility is set for the whole market.
- War, industrial action, civil unrest or cyber sabotage – this state is declared by the Exchange Management Board with simultaneous effect for the whole market.
- Disorderly trading conditions at the exchange – this state is declared when there is either a significant increase of processing times, or multiple erroneous executions of transactions, or loss of

connectivity for many Participants. The state of disorderly trading conditions is declared by the Exchange Management Board with simultaneous effect for the whole market.

- Suspension of pre-trade transparency obligation – the declaration of this state rests upon the decision of the responsible regulator. This condition applies per product.

Exceptional circumstances will be declared for a period of one hour and will end as soon as the triggering conditions are no longer met. The state of exceptional circumstances may be extended until the end of the business day, if the criteria are repeatedly breached. Exceptional circumstances will end automatically at the end of the business day. In case the triggering conditions remain in effect, they will be declared again on the next business day.

T7 will publish exceptional circumstances only via news messages (Eurex webpage, T7 GUI and ETI). Exceptional circumstances will not be communicated via the T7 market data interfaces. Thus, there might be situations where stressed market conditions in a product are set during a state of exceptional circumstances. In this case, exceptional circumstances always overrules stressed market conditions, regardless of the sequence of setting the regulatory trading conditions.

2.1.3.3 Liquidity Provision Indicator

According to the regulatory requirements, Regulatory Market Makers are obliged to flag orders and quotes entered under a market making agreement for liquidity provision (**liquidity provision activity**). As outlined in the related ESMA guidelines for MiFID II, the following scenarios of liquidity provision activities are defined:

- Participant performing algorithmic trading to pursue a market making strategy (*Trading Capacity* set to *M* or *P*).
- Participant performing a liquidity provision activity (not denoted as a market making strategy), dealing on own account (*Trading Capacity* set to *M* or *P*).
- Participant performing a liquidity provision activity executes orders on behalf of clients (*Trading Capacity* set to *A*).

T7 will introduce a **Liquidity Provision Indicator** to allow the flagging of orders and quotes used in a liquidity provision activity. Additionally, in order to ensure maximum fit to the on-exchange model, the Liquidity Provision Indicator will be available in TES trading per TES trade side.

The user can maintain the Liquidity Provision Indicator on order or quote entry or modification. The Liquidity Provision Indicator of a TES trade side can be maintained by the approver and initially by the entering user of a TES trade.

2.1.3.4 New Product Parameters for Market Making Regulations

T7 will indicate the applicability of the MiFID II market making regulations by the following new product trading parameters:

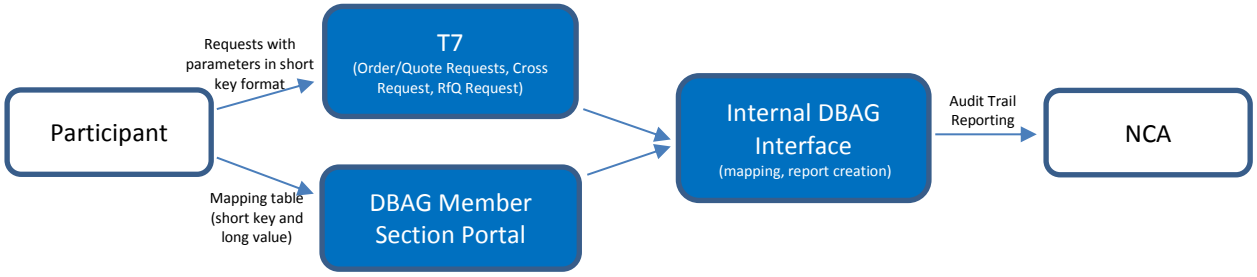
- Market Making Obligation flag – indicates whether a product is subject to incentives for quotation during stressed market conditions. This flag will be set for all equity index derivatives and all products that have a liquid equity or ETF instrument as underlying (according to the definition of ESMA). Products with market making obligation will always support automated stressed market conditions.
- SMC Eligibility flag – indicates whether a product supports automated stressed market conditions. It will be set for equity index derivatives, single stock options and futures, ETF derivatives.

The Market Making Obligation flag and the SMC Eligibility flag are published in RDI and RDF and in the product and instrument files on the Eurex webpage.

2.1.4 Audit Trail Reporting

According to the MiFID II requirements for Audit Trail reporting, Deutsche Börse AG is obliged to store relevant data for all orders and quotes in all instruments, which are received by the T7 system for the Eurex, EEX and Xetra markets and provide it to the National Competent Authority (NCA) on request and on short notice. The requested reports will be prepared internally by Deutsche Börse AG, containing the requested fields and according to the format specified by the regulator.

There are several new parameters, which the Participants need to provide to their Central Coordinator, who will upload them in the Member Section on the Eurex website www.eurexchange.com. These parameters have to be in the format required by the regulator (alphanumeric long values), a short key for each of them needs to be provided as well. On the other hand, the Order and Quote Entry and Modification requests, the Cross request and the RfQ (Request for Quote) request in the T7 trading interfaces (ETI, FIX, GUI), will be enhanced with the corresponding parameters that need to be filled with the short keys. Deutsche Börse AG will map the short keys from the Order/ Quote Audit Trail records to the information provided via Participants' uploads and on request will create the Audit Trail Reporting for the regulator.



Several new parameters will be introduced with T7 Release 6.0 for this purpose that need to be filled by Participants on order and quote entry.

2.1.4.1 Client Identification Code

ESMA requires a Client Identification Code (alphanumeric value with up to 35 characters) in the Audit Trail Reporting with the following values:

- the Legal Entity Identifier (LEI), if the client is a legal entity,
- the National Identifier (NationalID), if the client is not a legal entity,
- AGGR, if the order is an aggregation of multiple client orders,
- PNAL, pending allocation.

This information has to be uploaded by the Participants in the newly introduced upload portal.

2.1.4.2 Investment Decision within Firm

ESMA requires the reporting of the person or algorithm on Participant's side responsible for the investment decision. The Investment Decision within Firm parameter (alphanumeric value with up to 35 characters) will provide either the National Identifier (NationalID) of the person responsible for the investment decision, or the algorithm identifier (AlgoID), to identify the algorithm responsible for the order/ quote entry or modification. Note that the person responsible for the investment decision may be different from the trader who enters the order or quote.

Two new optional fields will be introduced with T7 Release 6.0 to support the required functionality:

- *Investment Decision Maker* – a short (8-byte) numeric code that will be mapped (by an internal DBAG interface) to the long alphanumeric value for Investment Decision within Firm required for the regulatory reporting. The field may be filled with the algorithmic identifier or the short code for the person responsible for the trade, it may also remain empty.

- *Investment Decision Qualifier* – optional 1-byte parameter that determines the business logic of the investment decision: algorithm, in case *Investment Decision Maker* represents an algorithmic identifier or human otherwise.

2.1.4.3 Execution within Firm

ESMA also requires that the trading venue provides the identification of the person (Trader) or algorithm within its Participants, who is executing the transaction. T7 will introduce two parameters to support the requirement:

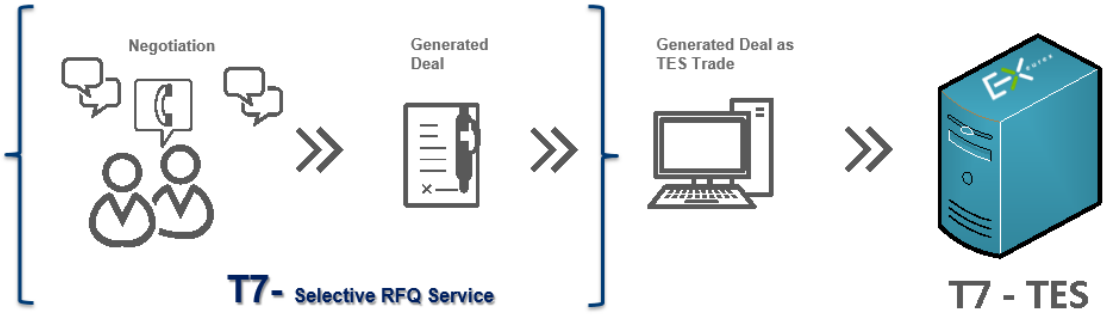
- *Executing Trader* – a short (8-byte) numeric code that will be mapped (by an internal DBAG interface) to the long alphanumeric value for the regulatory reporting. The field may be filled with the algorithmic identifier or the short code for the person responsible for the trade.
- *Executing Trader Qualifier* – additional 1-byte parameter that determines the business logic of the investment decision: algorithm, in case *Investment Decision Maker* represents an algorithmic identifier or human otherwise.

Additional information about the required reference data from Participants and the enhancement of order records is provided in *'Circular 040/17: Participant reference data and enhancement of order records'* from 3 May 2017 on the Eurex webpage.

2.1.5 Selective Request for Quote Service (SRQS)

With the upcoming MiFID II regulation there will be an increased requirement on investment firms to prove Best Execution. Eurex wants to provide its members tools to meet these challenges. For this purpose, T7 will be enhanced with a Selective Request for Quote Service (SRQS) to negotiate off-book transactions electronically. Aimed are both Brokers and Market Makers in Fixed Income Options for the initial release, but the new SRQS is available for other products as well. The service helps to provide all necessary data to prove Best Execution, while also streamlining the current voice driven market.

The SRQS in T7 will provide a workflow oriented functionality with a private/ closed order book for the Participants. The Participant is sending out a Request for Quote (RfQ) to selected other participants and will be owner of the order book of the instrument the RfQ is referring to. After receiving quotes, the owner of the order book can chose a specific quote by sending an order with the details of the that quote to match, thus creating a SRQS deal.



T7 Selective Request for Quote Service Scope

2.1.6 Delta Validation for Option Volatility Strategies

The currently available delta validation procedure in T7 verifies the underlying leg delta against a global maximum value. With T7 Release 6.0, Eurex will introduce a stricter validation for the delta neutrality of options volatility strategies in on-book trading. The new validation is called **Delta Neutrality Validation** and will allow on-book trading of an options volatility strategy only when the delta of the underlying leg compensates the delta of options legs in the concerned strategy within a pre-defined range at the time of

the creation of the strategy. Effectively, the delta neutrality validation compares the underlying leg ratio against the common multiplier of the options legs ratios (leg ratio multiplier). The delta neutrality validation is based on the most recent traded price of the underlying and the associated theoretical delta for the options legs. In case the delta neutrality validation is enabled, it will apply per product, as alternative to the current coarse validation procedure for the underlying leg ratio.

2.2 Other Functional Enhancements

2.2.1 Entry of Leg Trade Prices for TES Trades in Complex Instruments

Currently, the trade price of a TES trade in a complex instrument is entered for the complete complex instrument and after execution of the TES trade, the trade price of the complex instrument is decomposed by T7 into leg trade prices. As TES trades result from TES order information and the Participants may have already determined the leg trade prices, these leg prices may differ from the leg trade prices determined by T7. To increase the flexibility of the TES functionality, with T7 Release 6.0, Eurex will allow the initiating user of a TES trade to enter leg trade prices.

2.2.2 Calendar Spread Trading in Total Return Futures

With T7 Release 6.0, it will be possible to enter TES trades on a calendar spread in a Total Return Futures product. On TES trade entry for Total Return Futures, the leg prices must be provided apart from the overall TES trade price.

2.2.3 Initial Boundary Price based on Settlement Price and Quote Spreads

The price validations for TES trading will be enhanced to use the previous day settlement price as reference price and calculate minimum and maximum price boundaries around it by using the quote spreads.

2.2.4 Support of non-persistent GTC order via both, HF and LF sessions

Non persistent GTC orders will be persisted in T7 end-of-day processing. On the next day, these GTC orders will become part of the T7 order-book (and be restated) independently of the availability of the owning session.

This leads to a changed system behaviour for HF sessions. During the T7 system start an order book restatement will take place caused by support of non-persistent GTC orders. There will be Extended Order Information messages for each restated order and end of the restatement messages per product (even for HF sessions not submitting/owning GTC orders).

2.3 Technical Enhancements

2.3.1 Partition Specific Gateways

With T7 Release 6.0, Deutsche Börse AG will introduce partition specific gateways, which will replace the currently existing high frequency (HF) gateways in a stepwise approach.

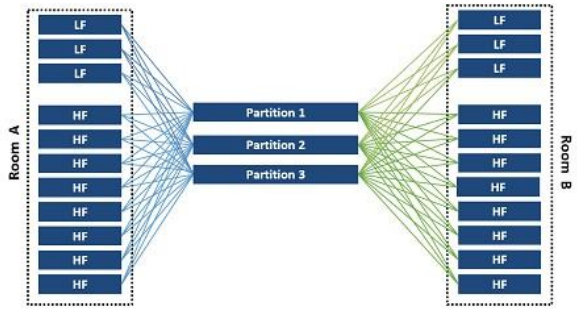
Currently, the T7 trading system offers multiple paths into the matching engine via its gateways. In recent years, the development in technology has massively decreased processing times of exchanges and reaction times of Trading Participants. This leads to several issues with the multi-gateway architecture, such as:

- latency-variance between the Trading Participants' installations and the exchange matching engine,
- some Participants using statistical advantages by sending equivalent requests multiple times. This leads to short-term system overload and longer delays in processing on exchange level.

With T7 Release 6.0, the above issues will be addressed by reducing the number of gateways to one fast gateway per Matching Engine (Partition) and by guaranteed ordering within these gateways. This will

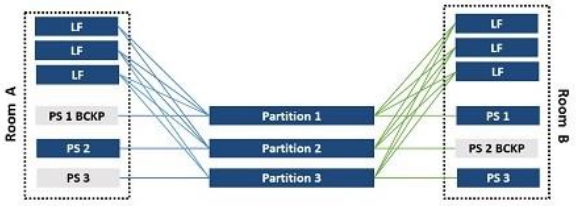
increase predictability, reduce multiplicity and mitigate the challenges for trading surveillance. HF gateways will be replaced by partition specific gateways step by step until end of March 2018, i.e. they will be activated partition by partition. During this phase, some HF gateways will remain active. As a next step, routing to these partitions will be disabled on HF gateways. After partition specific gateways have been activated for all partitions, the HF gateways will be switched off. Thus, after the migration phase, the markets will use a combination of LF and partition specific gateways.

Only HF sessions can successfully login to partition specific gateways or HF gateways as long as these (co)exist. Handling of LF sessions will remain unchanged. The ordering process of a session via the



Current setup

(Only 3 partitions shown for simplicity)



Setup after migration to partition specific gateways

Deutsche Börse Member Portal will remain unchanged as well.

2.3.1.1 Session Scope and Login Handling

A session may only login to one gateway, i.e. there will be a one-to-one mapping of session ID to TCP connection at any given point in time.

For each active partition specific gateway, there will be a standby partition specific gateway for failover purposes. The standby gateway will accept TCP connections and session login requests in order to allow network setup checks. Partition specific gateways will accept no other requests in standby mode. The initial list of partition specific gateways will be published in the 'Network Access Guide', which is part of the T7 system documentation. Intra-release changes will be announced via the 'Implementation News'.

Parallel operation of partition specific and HF gateways will be possible during the migration phase. HF gateways will continue to route transactions to some partitions during this period.

A new limit on the maximum number of sessions per business unit that can login to a single partition specific gateway at any given point in time will be introduced. This limit will be published in the system documentation.

2.3.1.2 Failover and Session Handling

Upon a failure of a partition specific gateway, the standby partition specific gateway will take over. As with current gateways, sessions that were logged in on a failed gateway will be logged out and all quotes and non-persistent orders will be deleted.

To allow orderly and fair order management, there will be a predefined period in which order management is suspended via the partition specific gateway on affected partitions after a partition specific gateway fails over. Deutsche Börse AG will provide a dedicated Focus Day for a partition specific gateways failover test in the T7 simulation environment.

The session login process after failover follows the existing logic described in Section 'Connectivity and Session Parameters' of the Enhanced Trading Interface Manual. Upon a failure of a partition specific gateway (or the loss of connectivity), the session needs to reinitiate connection by sending a connection

requests to the connection gateway. The details of partition specific gateway failover will be described in the "Incident Handling Guide" for T7.

As there will be a single active partition specific gateway for each given partition, in case of a loss of network connectivity on this network side, Participants using only one connection line will be able to reach the gateways in room A via B network with a certain delay.

2.3.1.3 Partition Specific Gatway Introduction Schedule for Simulation

The Partition Specifiy Gateways will be introduced in production after the production introdcution on 4 December 2017. The Partition Specific Gateways will likewise be introduced Simulation as follows:

- From Friday 29 September, Partition Specific Gateways will be available for Eurex Partition 1 and Xetra Partition 30
- From Friday 9 October, Partition Specific Gateways will be available for Eurex Partition 2 and Xetra Partition 31

2.3.2 Individual Marketplace Calendars

There are four international marketplaces setup on the T7 trading system currently:

- Eurex/ EXX Derivatives[1]
- Xetra Cash
- Vienna Cash
- Dublin Cash

This leads to high flexibility requirements towards the system. For example, some marketplaces on T7 may be available for trading, while at the same time, other marketplaces may be closed due to a public holiday. In order to minimize the operations efforts on customers' side, Deutsche Börse AG will enhance the trading calendar logic in T7 by introducing individual marketplace trading calendars with Release 6.0. Based on these calendars, the architecture components of T7 supporting marketplaces that are closed will remain down, or their activities will be suppressed. Thus, T7 will not distribute any data (e.g. broadcasts, reference data, reports) for these marketplaces. Participants and Operations departments of exchanges that are closed on a certain day will not be affected by the fact that other exchanges are open for trading on the same day.

2.3.3 T7 Enhanced Trading Interface and FIX Interface

With T7 Release 6.0, the T7 Enhanced Trading Interface (ETI) will move to version "6.0". ETI version "5.0" will no longer be supported, i.e. T7 ETI will not be backwards compatible to the ETI version for Release 5.0.

Detailed information about the ETI changes and enhancements in T7 Release 6.0 will be provided in the Trading Interfaces documentation on the markets webpage.

The T7 FIX interface will not be backwards compatible to the FIX interface for Release 5.0.

2.3.3.1 ETI Enhancements regarding the MiFID II Regulatory Requirements

The following enhancements in the ETI messages will be introduced to support the MiFID II regulatory requirements:

- For pre-trade controls – there will be a new flag (ValueCheckTypeValue) to allow the skipping of the Order Value validation in the messages:
    - New Order Single

[1] The Eurex market and the EEX market are set up on one marketplace called „Eurex/ EEX Derivatives".

  - New Order Multi Leg
  - Mass Quote
  - Replace Order Single
  - Replace Order Multi Leg
- Regulatory Trading Conditions – T7 will publish exceptional circumstances via ETI news messages.
- The Liquidity Provision Indicator will be introduced in the following ETI messages:
  - New Order Single (short and regular layout)
  - New Order Multi Leg
  - Mass Quote
  - Replace Order Single (short and regular layout)
  - Replace Order Multi Leg
  - Enter TES Trade
  - Modify TES Trade
  - Approve TES Trade
- The following new parameters will be introduced in ETI to support the Audit Trail Reporting requirements:
  - ClientID (FIX parameter name: PartyIdClientID)
  - InvestmentDecisionMaker (FIX parameter name: PartyIdInvestmentDecisionMaker)
  - InvestmentDecisionQualifier (FIX parameter name: PartyIdInvestmentDecisionMakerQualifier)
  - ExecutingTrader (FIX parameter name: ExecutingTrader)
  - ExecutionTraderQualifier (FIX parameter name: ExecutingTraderQualifier)

2.3.3.2 Selective Request for Quote Service Interface Landscape

The T7 Enhanced Trading Interface, will be enhanced to support the Selected Request for Quote Service (SRQS) functionality. Existing low frequency sessions for on-exchange trading can also be used for the transactions on the T7 SRQS without any modifications. The service supports activities only via low frequency sessions and the T7 GUI.

The following new requests on T7 ETI will be introduced to support the SRQS functionality:

- **Open Negotiation Request** (RfQ Request on the SRQS) – the requester can use this request to send a RfQ and start the Negotiation Event workflow.
- **Update Negotiation Request** – the requester can update the Negotiation Event with this request, it can also be used by the requester to *Close* an *Open* Negotiation Event.
- **Enter Quote Request** – the respondent can use this request to provide quote in response to the RfQ (Negotiation Event), it can also be used to update or delete the quotes.
- **Hit Quote Request** (Order Request) – the requester can send an order for a specific quote side of a quote belonging to a respondent with this request.
- **Update Deal Request** – the requester and the respondents can use the request to update the deal status.

2.3.3.3 Entry of Leg Trade Prices for TES Trades in Complex Instruments

The following requests and broadcasts will be enhanced with an instrument leg price group containing the pair of leg instrument identifier *LegSecurityID* and leg price *LegPrice*:

- Enter TES Trade
- Modify TES Trade
- TES broadcast
- Approve TES Trade broadcast

- TES Trade Upload broadcast

The entered leg prices are communicated to the approving users via the TES broadcast. The Approve TES Trade broadcast and TES Trade Upload broadcasts will also be enhanced with leg instrument identifier and leg trade price.

The TES Trade Confirmation and TES Trade broadcast will be enhanced with this new TES deal attribute *PriceDecomposition*.

2.3.4 Market Data and Reference Data Interface Changes

Detailed information on the enhancements and changes to be introduced in the T7 Market and Reference Data Interfaces with Release 6.0 will be provided in the respective interfaces documentation on the Eurex webpage.

Regulatory Trading Conditions – stressed market conditions will be published via T7 MDI, EMDI and EOBI. The following messages will be enhanced to indicate stressed market conditions:

- Instrument State Change
- Mass Instrument State Change
- Depth Snapshot Message
- Product State Change.

The following enhancements will be introduced in T7 RDI and RDF **Product Snapshot**:

- The Market Making obligation flag.
- The eligibility of automated stressed market conditions (SMC Eligibility Flag) as additional product (market segment) attribute is shown in the message.
- The message will be enhanced to indicate that the applicable minimum quote quantity (bid and offer in quote size rules) is adapted in stressed market conditions.
- The message will be enhanced to indicate that the applicable price range tables for the validation of quote spreads in mass quote request are adapted in stressed market conditions.
- The message will be enhanced to indicate that the applicable price range tables for the price reasonability check and the market order matching range will be adapted only in stressed market conditions on fast market (SMC-Fast).

2.3.5 T7 Trader and Admin GUI

2.3.5.1 Enhancements regarding the MiFID II Regulatory Requirements

- Participants Admin users will have the possibility to set the Maximum Order Value and Maximum Order Quantity per user in the T7 Admin GUI, the changes are effective immediately.
- The *ClientID* will be provided in the Order Entry and Modification panels, as well in the TES panels.
- The *InvestmentDecisionIndicator* and the *ExecutionTraderIndicator* will be automatically set to *Human* for orders entered via the T7 GUI.
- The Liquidity Provision Indicator will be provided in the Order Entry and Modification GUI panels, in the TES GUI panels, in the Order View and Order History View.
- The SMC-Auto status will be shown on the following views: Market, Contract Statistics, Product Statistics.

2.3.5.2 Enhancements regarding the Selective Request for Quote Service

The Eurex Trader GUI will support the functionality provided by the SRQS for both requestor (Broker) and respondent (Market Maker) and will act as the reference client implementation. The Eurex Trader GUI will efficiently streamline the process of entering a deal in the service as TES trade.

2.3.5.3 Enhancements regarding Leg Trade Prices for TES Trades in Complex Instruments

The TES Block Trade Entry window in the T7 Trader and Admin GUI will be enhanced to provide the price field at leg level for the TES trades in the complex instruments. The new TES Deal attribute *PriceDecomposition* is added to the T7 GUI Trade view, the TES view and to the TES Time & Sales view, in case the information is public.

2.4 Reports

The following new reports will be introduced with T7 6.0:

- TD954 – Stressed Market Conditions – a daily report for the fulfilment of market making requirements during Stressed Market Conditions per business unit and product.
- TD983 – Regulatory Market Making – a daily report for the fulfilment of the market maker requirements per business unit and product.
- TE600 – Daily Selective RfQ Maintenance – a daily report for the SRQS activity per business unit. The report contains all the details of the Negotiation Events and Deals per product.
- TR160 – Identifier Mapping Error – this is a daily mapping status report per business unit. Whenever for any T7 order the mapping of short keys to long values for *ClientID* returns an error, “missing”, “not unique”, “PNAL” or “AGGR”, the respective data will be included in this error report for verification and correction by the Participant.
- TR161 – Identifier Mapping Status – this is a daily mapping status report per business unit. The defined valid mappings of short keys to long values will be stored for the regulatory Audit Trail Reporting.

There will be changes in the following existing derivatives market reports:

- CB069 - Transaction Report - a new tag Trades Count which provides the total number of trades is introduced.
- TD980 – Excessive System Usage Report – a new tag *SMC-fulfilled*” is added to the report.
- TE540 – Daily Order Maintenance – several new tags are added to the report: *Client Identifier*, *Investment Identifier*, *Investment Qualifier*, *Execution Qualifier*, *Execution Identifier*, *LiquidityProvActivity*.
- TE545 – Daily TES Maintenance – the report is enhanced to show the leg prices in case they are entered by the initiating user. Also, the maintenance of the liquidity provision indicator (*LiquidityProvActivity*) is shown in the report.
- TE550 – Open Order Detail – several new tags are added to the report: *Client Identifier*, *Investment Identifier*, *Investment Qualifier*, *Execution Qualifier*, *Execution Identifier*, *LiquidityProvActivity*.
- TE810 – T7 Daily Trade Confirmation – is enhanced to provide information whether the leg trade price of the TES trade in complex instrument was decomposed by the system, or was provided by the initiating user.
- TE910 – Daily Trade Activity – the XML layout of the report and the sorting criteria will be changed.
- RD110 - User Profile Maintenance - tags TES Type and TES Eligibility have been moved to a separate group.

- RD115 - User Profile status - tags TES Type and TES Eligibility have been moved to a separate group and new cash market specific attributes have been added.
- The instrument group in all TE reports has been enhanced with the cash market specific attributes.

Several existing Market Making reports will be renamed:

- TD941 – Daily Permanent Market Making Quote Request Performance
- TD943 – Daily Permanent Market Making Strategy Quote Request Performance
- TD945 – MTD - Regular Market Making Quote Request Performance
- TD946 – MTD - Permanent Market Making Quote Request Performance
- TD948 – MTD - Permanent Market Making Strategy Quote Request Performance
- TD955 – Building Block Market Making Measurement
- TD956 – Permanent Market Making Measurement
- TD957 – Advanced Market Making Measurement

Details regarding these reports, as well as all other reports based on trading data from T7 will be published in the “T7 Trading Reports Reference Manual” that will be available on the Eurex webpage.

Note that there will be changes in the structure of the T7 reports manual in comparison to previous releases. The T7 reports documentation will contain cash and derivatives reports based on trading data only and exclude reports based on clearing data. These changes are due to the integration of the cash market on T7, as clearing is not relevant for cash markets. For example, the Fee reports for Xetra will be included in the “T7 Trading Reports Reference Manual”, however the Fee reports for Eurex will not be part of the T7 report manual. Eurex Participants need to refer to the clearing documentation published on the Eurex Clearing webpage: www.eurexclearing.com.

3. Simulation preparation

Preparation activities should be completed prior to the start of T7 Release 6.0 simulation.

3.1 Organisational preparation

Prior to the start of T7 Release 6.0 simulation, the following organisational preparatory activities need to be completed by all participants to ensure readiness for the simulation phase:

- All participants and ISVs will be asked to name a person acting as a single point of contact (SPoC) during the simulation. This person shall coordinate all internal activities, functional as well as technical, and shall communicate with affiliated participants during simulation, when collaboration is required. The SPoC maintenance is available to the participant via the web application under the following path:

  www.eurexchange.com -> *Member Section -> Technical Service -> Release Contacts*
- All participants need to maintain the MiFID II / MiFIR relevant Information for Client identification, Investment decision within firm and execution within firm Information in the member section. A separate publication will inform about the necessary steps. This information has to be added in order to be able to enter orders with mandatory fields where this Information (e.g. Client Identification code mandatory for A account) is needed.
- Documents will be made available in order to facilitate and support general simulation needs. However, in order to simulate the individual requirements participants are encouraged to define specific simulation objectives and scenarios on their own.
- Personnel for participation in simulation on the focus days (specified in the simulation calendar) should be identified and confirmed.
- Participants are encouraged to set up an internal issue management processes.

3.2 Functional preparation

Participants and ISVs planning to participate in the simulation should verify their individual setup/clearing-relationship and inform the exchange of any changes that may be required prior to the start of their simulation testing activity.

The completion of functional preparations prior to production start is mandatory.

3.3 Technical preparation

In order to ensure technical readiness for simulation, members/ISVs should consider the following topics:

- The changes for the following interfaces have to be implemented (please note that Release 6.0 does not offer backwards compability):
  - T7 Enhanced Trading Interface
  - T7 FIX Gateway
  - T7 Market and reference data interfaces
  - Common Report Engine (new and changed reports)
- A technical connection to T7 systems needs to be established (if not existing).
- Internal resources for timely installation of simulation software should be identified and confirmed.
- Related in-house systems should be set up to simulate subsequent processing.

4. Focus Day Overview

This chapter outlines which focus days will be offered. Focus days are planned and triggered by the Exchange. Specific actions have to be done by the Exchange to enable the scenario of the focus days. Focus days can be of technical nature (i.e. Market Data Service Failure), or of functional nature (i.e. Corporate Action). In either case participants cannot test without initiating action taken by the Exchange.

Recommended test scenarios on the other hand can be done by the participants without any particular initiating action by the Exchange. Particpants can run through these scenarios at their own discretion. These scenarios usually highlight new or changed features of the current release and participants are highly advised to perform these scenarios and verify their procedures and software used to be fit for these scenarios.

In the overview below, all focus days offered and recommended test scenarios for this release simulation are listed and described:

Technical Focus Days – Triggered by the Exchange:

- Partition specific Gateway Failover
- Fix Gateway Failover
- Matching Engine Failover and Failure, EOBI Failure
    - Matching Engine Failover
    - Matching Engine Failure / EOBI Failure
- Market Data Services Failure
- RDI Failover
- ETI Session to Gateway Reassignment
- Matching Engine Processing Delay
- GUI (forced user log out)
- Move products from one partition to another (emergency procedure)

Functional Focus Days – Triggered by the Exchange

- Stressed market conditions / exceptional circumstances
- Corporate Actions
- Market Halt
- Product Halt

Recommended Test Scenarios to be executed by participants

- Market Maker Liquidity Provision flag
- Pre-Trade Controls
- Audit Trail Reporting
- Full Spread Matrix
- Instrument / product state changes
- New Strategy Setup – complex instruments
- Market Maker Protection
- Trade Traceability
- Quote Handling
- Risk Events
- Stop/Release User / Risk Controls view

4.1 Technical Focus Days – Triggered by the Exchange

Technical focus days will be offered on several occasions during the simulation and will be triggered by the Exchange. Participants should use this opportunity to test the behaviour of the T7 trading and market data interfaces in conjunction with their own front office applications as well as their order book- and session management systems.

4.1.1 Partition specific Gateway Failover

In 2018 partition specific gateways will be introduced replacing the previously existing 10 Xetra and 16 Eurex high frequency gateways. The exact dates for the introduction of partition specific gateways will be announced separately via circular.

The new concept with two partition specific gateways per partition requires participant applications to be able to fail-over from one to the other gateway in case of gateway failure.

This focus day will shut down both high frequency gateways belonging to one partition consecutive allowing participants to verify the failover mechanisms in their applications.

Prior to the gateway failure participants are advised to insert several non-persistent and standard orders and quotes in the simulation environment of the Eurex Exchange's T7.

The exchange will cut gateway connections twice. Participants affected will therefore be able to check their internal failover processes.

As a result of the gateway failover the active gateway will be disconnected and participants will have to request the gateway connection again via a Gateway Request message with the existing session ID.

This could happen via automatic implemented request on the participant side. If there is no automatic reconnection available on the participant side, the reconnection has to be done manually. In both cases the participant receives a new gateway assignment from the exchange. All previously inserted non-persistent orders and quotes will be deleted and users are logged out. There will be no (active) subscription to broadcast streams any longer.

Participants will receive messages for all products where the matching engine deleted non-persistent orders (either lean or standard orders) and/or quotes of the lost session.

Please note: In case of a session loss / session logout the following (re-transmittable) messages will be generated for all products where the matching engine deleted non-persistent standard orders of the lost session:

- 10122 - (via listener and session data) for deleted orders:
  follow-up information will be provided with 10112 for each element (order) of
  <NotAffectedOrdersGrp> of 1012

➔ The Gateway Failover / Failure scenario will be offered between 15:00-16:00 CET.

4.1.2 FIX Gateway Failover

In case of a FIX Gateway Application Failover, all FIX sessions connected to this FIX Gateway will be disconnected and the corresponding port will be closed.

Customers should then activate the connection to the secondary FIX Gateway. The first FIX session logon to the secondary FIX Gateway may take some seconds. So if a connection or a session logon fails or is not responded to immediately, a second attempt should only be made after a few seconds (30 seconds recommended).

Schedule:

- 15:00 CEST: Application Failover FIX Gateway

  (IP address: 90.150.253.32 for derivatives markets and 90.152.253.42 for cash markets becomes unavailable)

- 15:15 CEST: Restart of FIX Gateway

  (IP address: 90.150.253.32 for derivatives markets and 90.152.253.42 for cash markets available again)

- 15:30 CEST: Application Failover FIX Gateway

  (IP address: 90.151.253.32 for derivatives markets and 90.153.253.42 for cash markets becomes unavailable)

- 15:45 CEST: Restart of FIX Gateway

  (IP address: 90.151.253.32 for derivatives markets and 90.153.253.42 for cash markets available again)

These tests are recommended for all T7 participants (Members/Vendors) using the FIX Interface.

In the event of a FIX Gateway failure, active FIX sessions will be disconnected. FIX sessions may be resumed for the same SenderCompID (49) on the secondary FIX Gateway, using the secondary IP address and port number.

Recovery notes:

In the event that the disconnection was due to an outage on the FIX Gateway side, members should consider the following recovery mechanisms:

- After reconnection of the FIX session, the FIX Gateway may receive a sequence number higher than the one expected and sends a Resend Request (2) message to the member.
- The member should resend all potentially missed messages with PossDupFlag (43) ="Y", to indicate that a message may have been previously transmitted with the same MsgSeqNum (34).
- Please note: No Gap Fill messages should be sent by the member during the resend series for application messages. Application messages should always be re-transmitted since the T7 FIX Gateway requires all missing application messages for the purpose of reconciliation with the T7 trading system fall-back.
- If a participant sends Gap Fill messages during the resend series for application messages the related orders might not be accessible any more via the FIX Gateway and related order specific information will not be forwarded to the FIX session.

➔ The FIX Failover / Failure_scenario will be offered between 15:00-16:00 CET

4.1.3 Matching Engine Failover and Failure, EOBI Failure

The T7 simulation system runs on separate partitions. Every process in the partition has a standby partner process that can take over in case the primary process fails. During simulation a failover and a failure of a matching engine will be simulated.

4.1.3.1 Matching Engine Failover

As a precondition participants are advised to enter non-persistent orders and quotes in the simulation environment before the matching engine failover takes place.

In this test scenario the existing matcher processes in the partition will be terminated and the standby partner process will take over. Shortly after the takeover, participants will receive a 'Market Reset Event' message, stating the technical problem and including the message key which is the last reproducible order message.

As a result of the failover, the products from the failed partition will still be tradable. A Market Reset Event message will be triggered. Non-persistent orders and quotes which were inserted earlier will be deleted after the restore of the order book.

There is a "failover time parameter" defined per product. If the failover happens in between that timeframe or the product did NOT have a continuous trading status prior to the corruption, the product will change to product state "halt", after the failover is finished.

Afterwards an order book replay will be sent including the persistent orders which were recoverable. Participants with low frequency sessions will receive an extra end of replay message on a product level. Participants with high frequency sessions will only receive the previously mentioned Market Reset Event Message. Hence, there are no extra deletion messages.

The Matching Engine failover triggers automatically an EOBI failure.

4.1.3.2 Matching Engine Failure

For the execution of a matching engine failure both matcher processes will be crashed for a partition in simulation. The test case will have an impact on all products available on this partition in permanent simulation. As long as the partition is not available, i.e. not restarted by the exchange, participants will neither be able to receive public market data for products linked to that partition, nor will they be able to enter orders.

A Market Reset Event message will be sent out to participants, when the matching engine has been restarted. Additionally the market data service will still be available but will send only unchanged data to participants.

The Matching Engine failure triggers automatically an EOBI failure as well.

4.1.3.3 T7 Enhanced Order Book Interface (EOBI) Failure

Prior to the focus day, participants should check whether they are able to receive market data from the T7 Enhanced Order Book Interface (EOBI) in advance, i.e. they should try to send some orders on benchmark futures products and equities which are available in the T7 permanent. Public market data information from EOBI will be provided in packages/UDP datagrams marked with a *MarketSegmentID*, i.e., product identifier; *PartitionID*; *ApplSeqNum* (continuous numbering format); Packages are sent over redundant multicast address and port combinations. Each package is uniquely identified by its *MarketSegmentID* and *ApplSeqNum* combination. In addition to the packet sequence numbering, individual messages are sequenced by *MsgSeqNum* which is contiguous per *MarketSegmentID*.

In case of an EOBI Failure, both the *ApplSeqNum* and the *MsgSeqNum* for a specific *MarketSegmentID* will restart from 1.

An EOBI Failure is triggered together with a matching engine failover or failure. Participant applications should notice this, whenever an *ApplSeqNum* is received which is smaller than one which has already been received for a specific *MarketSegmentID* and multicast address:port combination. Whenever a participant application detects a restart of the *MsgSeqNum* as well, it must rebuild all order books for this *MarketSegmentID* again from the EOBI snapshot channel.

All non-persistent orders entered prior to the failover will be deleted. The receiving application needs to invalidate its view of the order book and refresh once an explicit message has been received containing new information.

➔ The Matching Engine and EOBI Failover / Failure_scenario will be offered between 15:00-16:00 CET.

4.1.4 Market Data Services Failure

Prior to the focus day participants should check whether they receive market data from T7, i.e. they should try to send some orders on products which are available in permanent simulation. Market data information will be provided in packages marked with a *SenderCompID; PartitionID; PacketSeqNum* (continuous numbering format); the *MessageSeqNum* (continuous per *SenderCompID* multicast address and port combination) and a *MarketSegmentID*. The *SenderCompID* always remains constant for a product during the whole business day, if there is no failover.

When the market data failure is initiated, a crash will be simulated within the partition for market data services. During that time participants can try to insert new orders and quotes for that product. As a result they will receive a message that the associated partition is not available. As long as the partition is not available, i.e. not restarted by the exchange, participants will neither be able to receive market data for products linked to that partition, nor be able to enter orders. In this test scenario both partitions in simulation will be affected and therefore the test will refer to all products which are available at that time in the permanent simulation.

Participants can identify this failover scenario by comparing the *SenderCompID* value with the previous value. A new *SenderCompID,* which is available in the packet header and in each data message for incremental and snapshots, indicates the partition failure. Additionally the *PacketSeqNum* will be reset to 1.

Once this condition is observed, it can be assumed that a fail-over scenario took place and the rebuild of the order book can be started. All non-persistent orders entered prior to the failover will be deleted. The receiving application needs to invalidate its view of the order book until an explicit message has been received containing new information.

➔ The Market Data Services Failure scenario will be offered between 15:00-16:00 CET.

4.1.5 RDI Failure

In this test scenario both the failover and the restart of the RDI will be simulated[2]. As a precondition for the tests, participants are advised to create some complex instruments in the simulation environment before the failover and restart of the RDI are performed.

In the first part of the test scenario when the RDI fails over, a new initial reference file for Eurex will be generated with a new file set identifier. This file will contain any complex instruments, already created and deleted during the day, i.e. the entire history.

In the second part of the test scenario, when the RDI is restarted, a new initial reference file will be generated with a new file set identifier. This file contains the existing complex instruments but not the entire history of creations and deletions.

➔ The RDI Failure scenario will be offered between 15:00-16:00 CET.

4.1.6 ETI Session to Gateway Reassignment

Participants interact with the trading gateways by means of high frequency or low frequency sessions. The primary and secondary gateway, to which a session is assigned, is contained in the response to the gateway request message which is issued as the first step in the connection process. Under normal circumstances the assignment of the session to a trading gateway will not change on a day-to-day basis but either as a result of hardware failure or due to the re-assignment of sessions for load balancing purposes the session to gateway assignment can and will change.

[2] EEX RDI ist independent of RDI and will not be affected by the RDI Failure. .

Participants must not only ensure that their applications support the automatic gateway reassignment but also that their application can handle a logon to the primary or secondary gateway should one of the logins fail. Hardcoding of gateway assignments may lead to the inability to connect to the trading gateways.

To assist participants in preparing for the ETI session to gateway reassignment and to ensure that trading applications are able to handle the scenario once it occurs, focus days will be offered whereby the session to gateway assignment will be changed for all sessions.

There will be two focus days for this scenario whereby both focus days will take place in the same week. In the simulation environment the end-of-day processing usually takes place on a Tuesday, Wednesday and a Thursday.

In the end-of-day processing on the first day where the focus day is specified, all session to gateway mappings will be deleted. Once the simulation environment becomes available again after the end-of-day processing, the assignment of the sessions to the trading gateways will be performed on a “round robin” principle and there will be no way to ascertain which gateway will be assigned in advance. Applications will be required to process the response from the gateway request message to find out which trading gateways can be used for a particular session.

A list of all the possible trading gateways together with their IP addresses is listed in the “Network Access Guide” document which is available on the website under > Technology > System Documentation

In the end-of-day processing on the following batch day, the original session to gateway mappings will be restored.

➔ The ETI to Gateway Session Reassignment scenario will be offered over a time spanning two batch days with part one deleting all existing mapping and part two restoring the original session to gateway mappings.

4.1.7 Matching Engine Processing Delay

This focus day scenario is provided to assist participants in testing the very rare event where massive processing delays occur on a partition. In this scenario the following events will be triggered:

- All non-persistent Orders and Quotes will be deleted for the affected product(s)
- Product-specific DeleteAllOrderQuoteEventBroadcast messages will be sent to all ETI and FIX sessions with MassActionReason set to (111) Product_temporarily_not_tradable.
- For a minimum time period of 10 seconds or until the slow processing is resolved, all transactions except order deletions will be rejected with SessionRejectReason set to (102) Service_Temporarily_Not_Available and VarText 'TRANSACTION REJECTED DUE TO SLOW PARTITION'
- In the event that a product is temporarily not tradable, Participants will be informed when the matching engine will accept transactions again by a TradingSessionStatus message (MsgType (tag 35) = “h”) specifying TradSesEvent (tag 1368) = 105 (“Service Resumed”).

Please Note: Participants will still be able to send deletion requests for any persistent orders which they would like to remove.

This focus day scenario is performed for the following markets and products:

- XEUR: AFR
- XETR: DE0006599905
- XDUB: IE00BJMZDW83
- XVIE: AT0000764626

Participants are requested to check that their applications can correctly handle order / quote deletions and transaction rejections due to the slow partition state.

➔ The Matching Engine Processing Delay scenario will be offered between 15:00-16:00 CET.

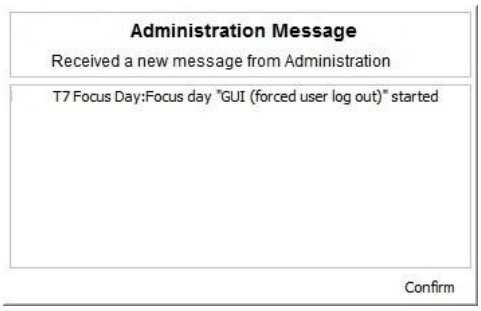
4.1.8 GUI (forced user log out)

The GUI Focus Day scenario is provided to first of all make participants aware of a function within T7 whereby in an emergency/exceptional situation Operations can not only send messages directly to the users screen but also force the termination of the GUI itself. In addition, the focus day is also provided to make participants aware of the effects of a full GUI environment restart. The GUI (forced user log out) focus day will be sub-divided into three parts:

- Send Admin Message only
- Admin Message + Forced Trader GUI Shutdown
- Full GUI environment restart

4.1.8.1 Send Admin Message only

All GUI instances (both Admin and Trading) logged in at the point when the focus day is initiated will receive a message “T7 Focus Day: Focus day “GUI (forced user log out)” started”. This message will appear in a new popup window.



This window can be closed by pressing the Confirm button.

4.1.8.2 Admin Message + Forced Trader GUI Shutdown

After this first message the following message will be send 10 minutes prior to the GUI environment shutdown: “T7 GUI Focus Day: Automatic GUI shutdown has been triggered and the GUI environment will be restarted”. On the Trader and Admin GUI the following pop-up windows will be displayed:



The colour of this popup window will turn to yellow 15 seconds prior to the forced shutdown and turns red for the last 5 seconds.

4.1.8.3 Full GUI environment restart

Following a full restart of the GUI environment in simulation will be performed. On the day where the focus day is scheduled, participants will be encouraged to suspend orders so that the effect on suspended orders

caused by a GUI restart can be observed. Suspended orders will all be deleted, the rest of the order book will be unchanged after a restart.

➔ The GUI (forced user log out) focus day scenario will be offered between 15:00-15:30 CET.

4.1.9 Move products from one partition to another (emergency procedure)

This focus day scenario is intended to simulate the unlikely event that products need to be moved from one partition to another before the start of trading.

Under normal circumstances, the assignment of products to a partition will not change on a day-to-day basis but either as a result of hardware failure or due to a re-configuration, the assignment of products can and will change.

In this focus day scenario all products /products assignment groups outlined belwow will be moved from one partition to another prior to the start of the trading phase (closed & pre-trading) in the T7 simulation environment.

As a consequence of the product move from one to another partition the entire T7 system will be restarted. All non-persistent orders, quotes entered and recoverable broadcast streams disseminated before restart will be deleted. Please be aware that persistent orders will be moved to the other partition too and are part of the orderbook restatement. The PartitionID in the reference data, product snapshot and packet header for EMDI and EOBI for the affected product(s) will change. When the RDI is restarted, a new initial reference file will be generated with a new file set identifier. Reference Data via RDI and RDF must be reprocessed by client applications following the restart. The SenderCompID in the Market Data for the product will change following the restart. The service on which the market data is published first for EMDI / EOBI may change (even to odd or vice versa). The multicast addresses on which the market data is disseminated will not change

Participants must ensure that their applications support the automatic reassignment of products. Hardcoding of product to partition assignments may lead to the inability to identify or trade these products.

➔ This focus day scenario is performed for the following markets and products:
XEUR products: CONF, FBON, FBTM, FBTP, FBTS, FGBL, FGBM, FGBS, FGBX, FOAM, FOAT, FSWL, GE02, GE05 & GE30
XETR product assignment groups: GER1, MDX1, SDX1, STX6 &TDX1.

➔ The Move products from one partition to another one (emergency procedure) focus day scenario will be performed in the morning after a batch run and should be completed before 11am (CET/CEST). Please note: The products which have been moved from one partition to another, will remain on the “new” partition until this focus day scenario is repeated.

4.2 Functional Focus Days – Triggered by the Exchange

The exact dates for the functional focus days triggered by the exchange are displayed in the simulation calendar available on the website Technology*www.eurexchange.com -> Technology*

4.2.1 Stressed market conditions / exceptional circumstances

The new regulatory relevant states of market conditions for market making will be normal market conditions, stressed market conditions and exceptional circumstances.

Stressed market conditions will be established on product level, whereas exceptional circumstances will typically affect the whole market.

During stressed market conditions, the maximum quote spread for quotes and Request for Quote requests is widened and the minimum quote quantity for quotes can be changed, i.e. the same behavior as for the current Eurex fast market conditions.

On this focus day Exceptional Circumstances will be simulated this state will be declared for a period of 15 minutes (whereas in production this would last for at least 1 hour). The appropriate message will be published via the News Board.

4.2.2 Corporate Actions

Participants will have the opportunity to test Corporate Action processing between T7 and the current Eurex Clearing classic system. On the first focus day, i.e. before end-of-day processing starts, participants are requested to generate positions in T7 in the defined products to check the system behaviour on the effective focus day (second business day).

4.2.3 Market Halt

As a possibility to reflect a market halt in T7 and Eurex Clearing classic system, the Exchange has planned one predefined focus day. This market halt will be done on an intraday basis between 15:00 and 15:30 CET.

Test scenario and expected result:

Prior to the planned Market Halt participants are recommended to enter non persistent orders and quotes and persistent orders in any products which are available in the permanent simulation. As a result of the market halt, products will not be tradable between the given times in the T7 simulation. In this scenario all non-persistent orders and quotes will be deleted after the market reset and participants must re-enter those orders and quotes. Persistent orders will stay in the system.

Additionally the following message will be sent: *10308 - (ETI: Mass Cancellation Event)*

➔ The exact dates of the Market Halt scenario are displayed in the current simulation calendar available on Eurex Exchange website www.eurexchange.com > Technology

4.2.4 Product Halt

As a possibility to reflect a product halt in simulation, the Exchange has planned one product halt on a predefined focus day. This test will be done on an intraday basis between 15:00 and 15:30 CET.

Test scenario and expected result:

Prior to the planned Product Halt participants are recommended to enter non persistent- and persistent orders and quotes in the affected product. As a result this product will not be tradable between the given times in the T7 Simulation. In this scenario all non-persistent orders and quotes will be deleted after the market reset and participants must re-enter them. Persistent orders for the affected product will stay in

the system. Additionally the following message occurs: *10308 - (ETI: Mass Cancellation Event aka DeleteAllOrderQuoteEventBroadcast aka BC CleanupOQ)*

4.3 Recommended Test Scenarios to be executed by participants

4.3.1 Market Maker Liquidity Provision flag

T7 will introduce a Liquidity Provision Indicator to allow the flagging of orders and quotes used in a liquidity provision activity. Additionally, in order to ensure maximum fit to the on-exchange model, the Liquidity Provision Indicator will be available in TES trading per TES trade side.

The value of the flag can either be set to 1 (“liquidity provision”) or the flag can be skipped (“no liquidity provision”).

For this test scenario, members are requested to test the functionality by entering orders/quotes with setting the liquidity provision flag.

In report TC540 participants can see all orders and quotes with the entered liquidity provision flag.

4.3.2 Pre-Trade Controls

The MiFID II requirements for pre-trade controls for cash markets are:

- Price collar check, which prevents orders with a too large price difference to a reference price from entering the order book.
- Maximum order quantity validation, which prevents orders with a too large order size from entering the order book.
- Maximum order value validation, which prevents orders with too large order values from entering the order book.

The price collar check requirement is covered by the existing T7 price reasonability check functionality.

The maximum order value validation was introduced with the current T7 Release 5.0 and covers the MiFID II requirements for maximum order value validation. For this test scenario, members are requested to test the functionality by entering orders/quotes, which are expected to trigger the validations, mentioned above.

4.3.3 Audit Trail Reporting

According to the MiFID II requirements for Audit Trail reporting, Deutsche Börse AG is obliged to store relevant data for all orders and quotes in all instruments, which are received by the T7 system for the Eurex, EEX and Xetra markets and provide it to the National Competent Authority (NCA) on request and on short notice. The requested reports will be prepared internally by Deutsche Börse AG, containing the requested fields and according to the format specified by the regulator.

- Client Identification Code consisting of Legal Entity Identifier (LEI), National Identifier (NationalID), aggregation flag (AGGR), pending allocation (PNAL)
- Investment Decision Maker
- Investment Decision Qualifier
- Executing Trader
- Executing Trader Qualifier

Within the scope of a European harmonization, so-called “Short Codes” will be used when entering an order or a quote. Within the scope of a European harmonization, so-called “Short Codes” will be used when entering an order or a quote. Participants have to use them instead of a LEI (Legal Entity Identifier)

or a CONCAT (Concatenated Code) or an Algo ID. Such short codes will be stored and audited according to the respective standards on data storage and handling.

For this test scenario, participants are requested to test the functionality by inserting orders and quotes, with filled Client ID, Executing Trader, Executing Trader Indicator, Investment Decision Maker and Investment Decision Indicator.

These fields shall be filled with short codes, which have to be uploaded with their respective long code via CSV file to the portal/member section. The upload functionality in the portal/member section is going to be available starting 18 September 2017.

Pleas note: Until particpants have uploaded valid values, the corresponding field will be filleds with default values. Details regarding of the "Short Codes" will be provided separately via circular.

4.3.4 Full Spread Matrix

In T7 it is possible to set up and trade products with up to 20 different calendars spreads.

The exchange can configure which calendar spreads of a futures product are considered for synthetic matching; a synthetically linked full spread matrix is achieved by considering all calendar spreads of a futures product.

The following products are configured with a synthetically linked full spread matrix in the permanent simulation:

Group	Product	Currency	Product Name
FINT	FEU3	EUR	THREE-MONTH-EURIBOR FUT. (ACI)
FINX	FEXD	EUR	FUT ON EURO STOXX 50 INDEX DIV
FVOL	FVS	EUR	FUT ON MINI VSTOXX

4.3.5 Instrument / product state changes

T7 applies trading states at both a product level and at an instrument level. Instruments of the same product can be in different instrument states. Product states apply to all instruments of a product.

While product states give structure to the trading day and control general access to the system, instrument states control order/quote maintenance, execution and availability of market information. The introduction of instrument states permits greater flexibility with auctions.

4.3.6 New Strategy Setup – complex instruments

Typically, complex instruments are requested by traders, however, some futures spreads are created by the exchange by default. Complex instruments requested by traders with open orders valid beyond the current trading day will be available the next day.

It is possible to have different trading parameters per instrument type, for example allocation schemes and price validations. Therefore, different instruments of the same product can vary in their trading behaviour.

Please note: Strategies are always created on a temporary basis and are cancelled during the end of day processing when their order book is empty.

Traders may request complex instruments from T7 at any time during the simulation. If the requested complex instrument matches a predefined standard option strategy, then the matching engine will create a standard option strategy.

4.3.7 Market Maker Protection

A Market Maker protection mechanism on a session level is provided to prevent too many simultaneous executions on quotes provided by a Market Maker. Market Maker protection parameters can be specified on either the product level or the product/instrument type level.

The participant may use the *MMParameterDefinitionRequest* in Eurex ETI or the T7 Trader GUI Market Maker Protection screen to define market maker protection parameters. There are additional features in T7 provided for MMP:

- MMP is available for both futures and options.
- MMP can be applied to all simple and complex instrument types independently, supplementing the existing protection on a product level.
- MMP uses quote inactivation rather than quote deletion.
- MMP can be maintained separately via the T7 Trader GUI, T7 Admin GUI and Eurex ETI.
- An additional percentage limit supplementing the already existing volume, delta and vega limits can be used for MMP.

4.3.8 Trade Traceability

T7 provides improved trade traceability, allowing orders to be linked to executions, trade confirmations, and trades in clearing for simple instruments and complex instruments.

While sending a new order participants can provide a client order ID and up to three free text fields, which are optional for Eurex ETI. For each new order received by Eurex Exchange a separate order ID by the exchange is assigned which is unique and returned to the participant on all private messages.

For every match event T7 assigns identifiers unique within product and business day, to each aggregated price level, every order execution and every trade.

For the matching of a complex order in addition to the order leg, the execution ID and order leg execution ID is provided for each leg of the complex instrument match.

4.3.9 Quote Handling

This scenario describes the most important features related to quote handling, e.g. ‘mass quote’ functionality allowing participants to enter, modify and delete multiple quotes of a session simultaneously for both, options and futures.

Quotes per business unit:
Quotes belong to the session on which they are entered. It is possible to have multiple sessions for one business unit and each session can have different quotes in the same instrument.

Mass quote entry:
In this scenario it is possible for the trader to enter, modify and delete multiple quotes of a session simultaneously. This scenario can be tested with futures as well as options as well as in combination with simple and complex instruments. This function is different from the “delete all quotes” feature, which deletes all quotes in one session.

Quote check:
A newly inserted or amended quote which fails the price reasonability or extended price range validation results in a complete deletion of the quote. This scenario can be tested with a positive and negative test scenario.

Automatic deletion:
In this scenario it can be tested that quotes are automatically deleted when the instrument status changes to “closed” or “restricted” or when the instrument has expired.

Quote activation / inactivation:
Quotes of a given session or product (and instrument type) can be set to active/inactive. Inactive quotes will be hidden from trading and will not participate in matching. Furthermore they will not be visible in the order book depth. Traders can continue to add, modify and cancel individual quotes. The inserted status for quotes is always persisted for the current business day. At the start of the new business day all newly entered quotes will be reset via default to status active.

During the time of a session inactivation any new quotes which are inserted for the session become automatically inactive. When reactivating the quotes they get a new matching time priority.

4.3.10 Risk Events

Risk parameters are adjusted in a way that risk events will be triggered due to defined trading volume or quantity limits. Limits can be set by Clearing Members for their Non-Clearing Members (Exchange Participants) or by Non Clearing Members themselves on an intraday basis. There are three levels of limitation which can be defined by participants and is the same for all business units.

1. *Alert message*

   The user will receive a popup message which informs him that he has exceeded a predefined limit, no further actions will happen.

2. *Threshold message*

   The user will be informed that he has exceeded the second limit and therefore a throttle mechanism is implemented for the trading. For traders it is no longer possible to trade in a general way and volume as the trade volume will be limited as per the threshold limitation given from the clearing members.

3. *Blocking message*

   With this scenario trading will be disabled for the respective trading user if he exceeds his trading limits or any other given quantity limits for trading. User entitlements are independent of those extra limitations.

4.3.11 Stop/Release User / Risk Controls view

The Risk Controls View comprises of two different functions; the Panic Cancel actions which results in the deletion of orders and/or quotes and the Stop/Release actions, which will not only delete orders and quotes but will prevent a single or group of traders/machines from further entry of quotes and orders. Please read more in the “Eurex Trader and Admin GUI Manual” available on the Eurex Website at

www.eurexchange.com -> Technology -> Eurex Exchange's T7 -> System Documentation -> Release 6.0 -> Eurex GUI Solutions

5. T7/FX Simulation

During the simulation period T7/FX trading will be possible in the environment analogue to the times for all trading markets. No special simulation scenarios are offered for environment T7/FX.

Please Note: T7/FX will continue with Release 5.0 until Thursday, 19 October 2017. T7/FX will be down for maintenance and conversion and will open with Release 6.0 from Wednesday, 25 October 2017.

5.1 Simulation processing scenario for FX Rolling Spot Futures

Due to the perpetual nature of FX Rolling Spot Futures (daily rollover of all positions) and the fact that it replicates holding a FX spot position and entering a T/N FX swap each day to synthetically move the spot FX delivery day, a daily adjustment of the variation margin is required for cleared contracts, to account for the costs of the T/N FX swap. This is technically achieved by booking technical trades at a correction price which is then used in the End of Day calculation of the variation margin.

Technical trades will trade out “to close” the ending position balance of the previous day at the defined position closing price e.g. for FX rolling spot positions it is the prevailing spot FX rate as determined by 360T at around 17:00 CET and trade in “to open” the ending position balance of the previous day at the defined position reopening price (per member and account), which e.g. for FX rolling spot positions is the prevailing spot FX rate as determined by 360T at around 17:00 CET plus or minus the prevailing T/N FX swap rate as determined by 360T at around 17:00 CET. Technical trades are required both for the long and short side of the ending balance.

The technical trades have the following characteristics:

- Booked as off-book trades (TES)
- Technical trades will be automatically approved by T7, Eurex Exchange’s trading system, by using a dedicated technical user ID
- The technical user ID will be set up by Eurex Clearing and will be assigned to those market participants who are admitted for trading and clearing the Rolling spot future contract
- Field ”text 3” is reserved for entries generated by Eurex Exchange only. Field “Text 3” will contain the T/N FX swap rate in the first six characters, the seventh character will be an “O” or a “C”, depending whether it is an opening or the closing technical trade

Participants and ISVs are encouraged to test these products as well in order to make sure they can handle the workflow for these products as well.

6. Documentation

The following existing documents will be revised for T7 Release 6.0. The preliminary release notes will be published in June 2017, simulation versions (identified by ◆) will be published in September 2017, and final versions (identified by ●) will be published in September, October and November 2017 prior to the production launch.

T7 Release 6.0	Eurex	Xetra	Combined	Q1 2017			Q2 2017			Q3 2017			Q4 2017		
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Release Notes															
T7 Release 6.0, Release Notes	X	X							◆				●		
Simulation															
Participant Simulation Guide	X	X										◆			
Overview and Functionality															
T7 Functional and Interface Overview			X									●			
T7 Cross System Traceability			X									●			
T7 Funtional Reference			X									●			
Participant and User Maintenance Manual	X	X											●		
Market Model Xetra		X										●			
GUI Solutions															
Trader, Admin and Clearer GUI - Manual	X	X										◆		●	
T7 Trader, Admin and Clearer GUI - Installation Manual			X									◆		●	
Trading Interfaces															
T7 Enhanced Trading Interface – Manuar incl. Repository and Header files			X								◆		●		
T7 Enhanced Trading Interface – XML Representation			X								◆		●		
T7 FIX Gateway - FIX 4.2 and 4.4 Manual incl. Fiximate and Repository			X								◆		●		
Market and Reference Data Interfaces															
T7 Market-, Enhanced Order Book- and Reference Data Interfaces, Manual incl. Fast Message Template and Repository			X								◆		●		
Reference Data File – FIXML Schema Files	X	X									◆		●		
Xetra Instrument Reference Data Guide		X										●			
T7 Extended Market Data Services – Manual incl. Fast Message Template and Underlying Ticker Data			X								◆		●		
Reports															
T7 Trading Reports Reference Manual	X	X										◆		●	
Common Report Engine User Guide			X										●		
Network Access															
Network Access Guide			X									●			
Rules & Regulations															
Xetra Rules & Regulations		X												●	

The documents will be available on the Eurex website www.eurexchange.com > **Technology > Eurex Exchange's T7 > System Documentation > Release 6.0.**

Please note that the outlined schedule is preliminary and subject to change.

7. Support

The standard support times of the Exchange will be in effect during the simulation phases. The helpdesk departments and further information sources are provided in the following section.

7.1 Contacts and support hours

The following helpdesks provide first level support for specific topics from Monday till Friday:

7.1.1 Group Client Key Account Management

Phone: individual number to your Group Client Key Account Manager (09:00 - 18:00 CET)

- Participants readiness activities
- Participant preparation requirements
- Participant setup questions for simulation and production
- Participant data changes for simulation and production
- ISV related queries

7.1.2 Functional Helpdesk Eurex

Phone: +49-69-211-1 12 10 (07:00 - 22:30 CET)

- Functional trading related issues for trading
- Functional focus days
- Product data management
- Market Control
- Simulation participation and execution

7.1.3 Helpdesk Clearing Data Control

Phone: +49-69-211-1 24 53 (08:00 - 20:00 CET)

- Clearing functionality
- Entitlement Management
- Participant- and user data management

7.1.4 Customer Technical Support

Phone: individual VIP number (24 hours, Monday - Friday)

- All Technical issues related to the simulation environment (e.g. connectivity issues)
- Technical focus days

7.2 Further sources of information

Changes and further information regarding the T7 simulation will be provided via the following channels:

1. Circulars
2. Info-Mail
3. Implementation News on Eurex Exchange's website for T7 under following path:

   www.eurexchange.com -> *Technology -> Eurex Exchange's T7 -> Implementation News*

8. Change log

The document contains the following changes compared to the previous versions.

No	Date	Chapter	Change
1.0	21 August 2017	All	Initial version for Eurex Exchange's T7 Release 6.0 Simulation