

T7 Release 6.0

Cash Markets

Participant Simulation Guide

Version 1.0

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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 Cash Markets Simulation. Participants should use this document to plan and prepare their T7 Release 6.0 simulation participation. 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.xetra.com > Technology.

Keywords

T7, Xetra, Cash Market, T7, Simulation, Simulation Schedule, Simulation Calendar, Cloud Simulation, 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, T7 Clearer GUI,

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Content

Definitions and abbreviations	7
1. Simulation Overview	8
1.1 Introduction	8
1.2 Intended audience	8
1.3 Timeline	9
1.4 T7 Cloud Simulation	9
1.5 Simulation calendar	9
1.5.1 Guiding principles for simulation calendar	9
1.6 Liquidity for selected products in the simulation environment	10
1.6.1 Liquidity (bid/ask prices)	10
1.7 Instruments for settlement end-to-end tests	10
2. New and modified features introduced by T7 Release 6.0	12
2.1 Functional Aspects driven by MiFID II/ MiFIR requirements	12
2.1.1 Pre-Trade Controls	12
2.1.1.1 Maximum Order Quantity Validation	12
2.1.1.2 Maximum Order Value Validation	12
2.1.2 Market Making Handling	12
2.1.2.1 Stressed Market Conditions	13
2.1.2.2 Exceptional Circumstances	13
2.1.2.3 Liquidity Provision Indicator	13
2.1.2.4 Market Making Obligation Flag	14
2.1.3 Audit Trail Reporting	14
2.1.3.1 Client Identification Code	14
2.1.3.2 Investment Decision within Firm	15
2.1.3.3 Execution within Firm	15
2.1.4 New/changed tick size regime and order conversion	15
2.1.5 Post-trade Transparency Provision	15
2.2 Other Functional Enhancements	15
2.2.1 Xetra Best	15
2.2.2 Volume Discovery Service	16
2.2.3 Designated Sponsor Quote Request	17
2.2.4 Support of non-persistent GTC order via both, HF and LF sessions	17
2.3 Technical Enhancements	17

2.3.1	Partition Specific Gateways	17
2.3.1.1	Session Scope and Login Handling	18
2.3.1.2	Failover and Session Handling	18
2.3.1.3	Partition Specific Gateway Introduction Schedule for Simulation	18
2.3.2	Individual Marketplace Calendars	19
2.3.3	T7 Enhanced Trading Interface and FIX Interface	19
2.3.3.1	ETI Enhancements regarding the MiFID II Regulatory Requirements	19
2.3.3.2	Enhancements regarding Xetra BEST	20
2.3.3.3	Enhancements regarding Volume Discovery Service	20
2.3.3.4	Enhancements regarding Designated Sponsor Request for Quote	20
2.3.4	Market Data and Reference Data Interface Changes	20
2.3.4.1	Enhancements regarding the MiFID II Regulatory Requirements	20
2.3.4.2	Enhancements regarding Xetra BEST	20
2.3.4.3	Enhancements regarding Volume Discovery Service	20
2.3.4.4	Enhancements regarding Designated Sponsor Quote Request	21
2.4	T7 Trader and Admin GUI	21
2.4.1	Enhancements regarding the MiFID II Regulatory Requirements	21
2.4.2	. Enhancements regarding Xetra Best	21
2.4.3	Enhancements regarding Volume Discovery Order	21
2.5	Reports	21
3.	Simulation preparation	23
3.1	Organisational preparation	23
3.2	Functional preparation	23
3.3	Technical preparation	23
4.	Focus Day Overview	24
4.1	Technical Focus Days – Triggered by the Exchange	24
4.1.1	Partition specific Gateway Failover	25
4.1.2	FIX Gateway Failover	25
4.1.3	Matching Engine Failover and Failure, EOBI Failure	26
4.1.3.1	Matching Engine Failover	26
4.1.3.2	Matching Engine Failure	27
	T7 Enhanced Order Book Interface (EOBI) Failure	27
4.1.4	Market Data Services Failure	27
4.1.5	ETI Session to Gateway Reassignment	28
4.1.6	Matching Engine Processing Delay	28

4.1.7 GUI (forced user log out)	29
4.1.7.1 Send Admin Message only	29
4.1.7.2 Admin Message + Forced Trader GUI Shutdown	29
4.1.7.3 Full GUI environment restart	30
4.1.8 Move products from one partition to another (emergency procedure)	30
4.2 Functional Focus Days – Triggered by the Exchange	31
4.2.1 New / changed tick size regime and order conversion	31
4.2.2 Stressed market conditions / exceptional circumstances	31
4.2.3 Corporate Actions	31
4.2.4 IPO	32
4.2.5 Product Halt	32
4.2.6 Instrument Suspend	32
4.3 Recommended Test Scenarios to be executed by participants	33
4.3.1 Volume Discovery Order, VDO	33
4.3.2 Xetra Best	33
4.3.3 Pre-Trade Controls	33
4.3.4 Audit Trail Reporting	34
4.3.5 Designated Sponsor Quote Request	34
5. Documentation	35
6. Support	36
6.1 Contacts and support hours	36
6.1.1 Group Client Key Account Management	36
6.1.2 Functional Helpdesk Xetra	36
6.1.3 Helpdesk Clearing Data Control	36
6.1.4 Customer Technical Support	36
6.2 Further sources of information	36
7. Change log	37

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 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 website under the following path:

www.xetra.com -> *Trading* -> *Trading calendar and trading hours*

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.xetra.com -> *Technology* -> *T7 trading architecture* -> *System documentation* -> *Release 6.0*

1.2 Intended audience

This document serves as the guide for all 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)
- Back office and other settlement functions, including Participants' clearing banks
- IT departments
- Network operations (WAN and LAN)
- Organizational departments

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

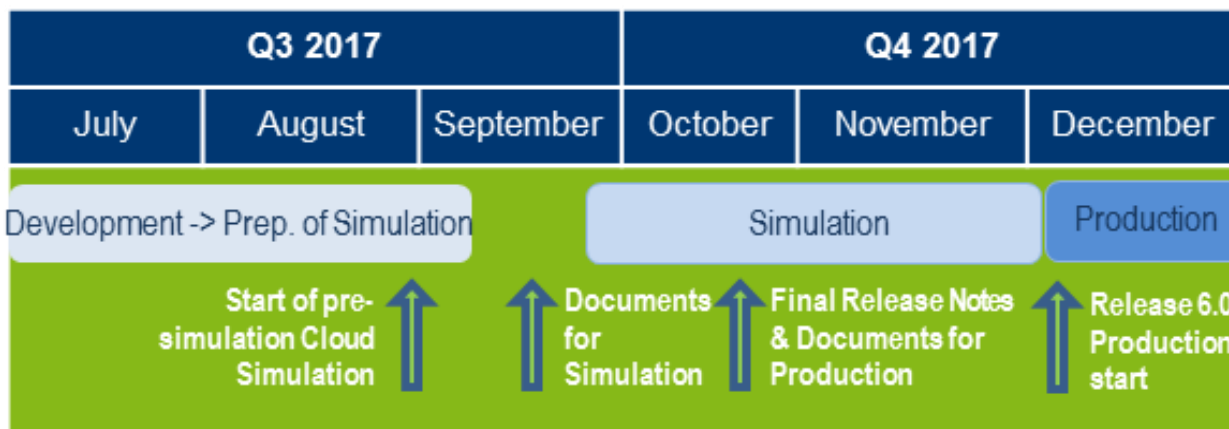


Figure 1: T7 Release 6.0 document publication and introduction timeline

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

www.xetra.com -> Technology -> T7 trading architecture -> 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 the website under the following path:

www.xetra.com -> Trading -> Trading calendar and trading hours

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 environments 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 environments. Participants are encouraged to use the Cloud Simulation for testing purposes during this period.
- 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. The Extended Market Data Service (EMDS) for the T7 Release 6.0 Simulation will be available from 16 October 2017. 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.
- 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.

1.6 Liquidity for selected products in the simulation environment

1.6.1 Liquidity (bid/ask prices)

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

- LU0937835576 (best bid, best ask)
 - LU1306625283 (best bid, best ask)
 - DE000A1E0HR8 (Bid and Ask prices with an order book depth level upto 3)
 - DE0005140008 (Bid and Ask prices with an order book depth level upto 3)
 - DE0005557508 (Bid and Ask prices with an order book depth level upto 3)
- ICEBERG:
- AT0000730007 (Bid and Ask prices with an order book depth level upto 3)
 - DE0005200000 (Bid and Ask prices with an order book depth level upto 3)

1.7 Instruments for settlement end-to-end tests

Clearing and settlement functionality can be tested with following instruments:

Name	ISIN
ANDRITZ AG	AT0000730007
UBS NAM. SF -,10	CH0244767585
ADVA AG OPT.NETW.O.N.	DE0005103006
TELEGATE AG O.N.	DE0005118806
BEIERSDORF AG O.N.	DE0005200000
CONTINENTAL AG O.N.	DE0005439004
DRILLISCH AB	DE0005545503
DT.TELEKOM AG NA	DE0005557508
FRESEN.MED.CARE AG O.N.	DE0005785802
BILFINGER BERGER AG	DE0005909006
LYXOR G.BUL.SEC.04/UND DZ	DE000A0LP781
ETFS MET.SEC.DZ07/UN.XAU	DE000A0N62G0

DT.BOERSE COM. XETRA-GOLD	DE000A0S9GB0
DB ETC PLC P GOLD EUR 60	DE000A1E0HR8

Please note that no trades will be settled during the period from September 29 until October 8, 2017. Also, no contract notes and reports for bilateral aggregation will be generated during this time.

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 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 is available in the current T7 system and covers the MiFID II requirements for maximum order value validation.

2.1.1.1 Maximum Order Quantity Validation

Participants will be able to maintain the maximum order quantity limits for their users intraday and the changes will be effective immediately. The validation can be skipped for orders and quotes entered via ETI and FIX gateways if the user wishes this explicitly. Orders entered via the T7 GUI are always subject to maximum order quantity check.

The total order quantity or the modified total order quantity will be validated against the maximum order quantity. Any previously matched partial execution will not be taken into account. If the order modification will lead to a maximum order quantity violation, then the modification request is rejected and the initial order remains in the order book.

Iceberg orders will be validated with the full order quantity when entering the order book, refills of Iceberg orders are not relevant for the validation. Volume Discovery Orders will be validated with the full order quantity.

2.1.1.2 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 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. Xetra 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.

2.1.2.1 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. An instrument is set in stressed market condition on T7, if the following criteria are met:

- significant short-term change in price, i.e. the cash market instrument is in an extended volatility interrupt on T7,
- significant short-term change in volume, i.e. significantly above-average traded volume in the price determination after an extended volatility interrupt.

Stressed market conditions will last a predefined time period (e.g. 20 minutes), which will be prolonged for another predefined time period in case of ongoing stressed market conditions.

2.1.2.2 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 (Xetra 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 overrule stressed market conditions, regardless of the sequence of setting the regulatory trading conditions.

2.1.2.3 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. The user can maintain the Liquidity Provision Indicator on order or quote entry or modification.

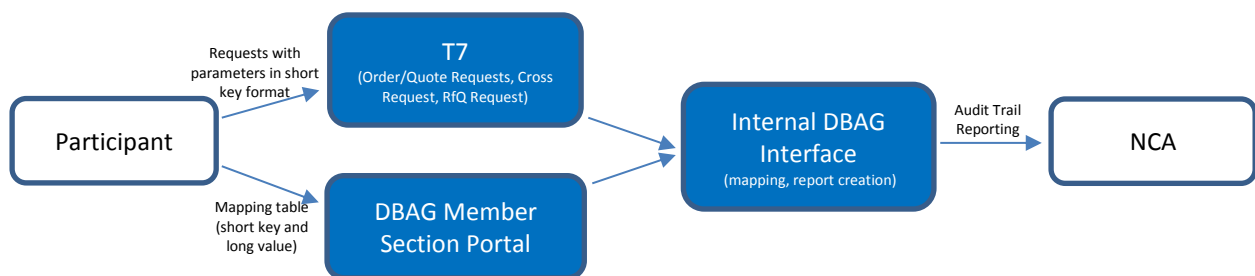
2.1.2.4 Market Making Obligation Flag

T7 will indicate the applicability of the MiFID II market making regulations for an instrument of the Xetra trading venue by the instrument parameter Market Making Obligation flag. This flag will be set for all cash instruments, which are declared as liquid instruments by ESMA. T7 will publish the flag on RDI and RDF.

2.1.3 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.

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 Xetra website www.xetra.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.

2.1.3.1 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.

2.1.3.2 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.

2.1.3.3 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 060/17 - MiFID II/MiFIR: Member reference data and enhancement of order records' from 16 June 2017 on the Xetra webpage.

2.1.4 New/changed tick size regime and order conversion

According to the tick size regime that will be introduced with MiFID II, ESMA will provide tick size tables to the trading venues. These tables may trigger tick size and price step adjustments for some products in T7, which on the other hand, may lead to deletion of active orders in the order book.

2.1.5 Post-trade Transparency Provision

The MiFID II post-trade transparency requirements for financial markets in the European Union affect equity, ETF, ETC and ETN products. With Release 6.0, T7 will be enhanced to flag trades in these products as algorithmic in the new field "Algorithmic Trade Indicator", if at least one order or quote with an algorithmic identifier flag participates in the execution event.

2.2 Other Functional Enhancements

2.2.1 Xetra Best

The BEST functionality that T7 will offer with Release 6.0 will guarantee an execution price better than the price within the current order book by routing of customer orders from Flow Providers to specific other

market Participants acting as BEST Executors. Beyond this, the BEST functionality will eliminate the problem of partial executions as all orders will be executed against the BEST Executor's quote in their full size.

The Xetra BEST Execution functionality will enable business units, which do not provide a BEST Execution facility themselves, to route their order flow to a BEST Executor. Such business units are called Flow Providers. The BEST Executor will provide BEST Execution for the customers of these Flow Providers. One BEST Executor can serve several Flow Providers, but one Flow Provider can send his orders to only one designated BEST Executor.

In order to provide BEST Execution, the BEST Executor will enter a special quote type called BEST quote that is not shown in the public order book. BEST Executors will be able to decide whether or not to provide BEST quotes, i.e. there will be no obligation to provide BEST quotes.

Xetra BEST trades are only possible if the Xetra BEST order either receives a price improvement in comparison to the current visible best bid/best ask limits of the order book or receives a better price for the size of the Xetra BEST order than the volume-weighted average of the limits for this size in the order book.

2.2.2 Volume Discovery Service

The Volume Discovery Service in T7 Release 6.0 will offer access to "dark" and "lit" liquidity. This new service will combine the execution of an Iceberg order in the open order book with the execution of the hidden part of the Iceberg order at the midpoint against other orders of this type.

The hidden part of an Iceberg order may be executed against other orders of this kind at the current midpoint of the Xetra order book up to a second limit price (Volume Discovery Price) that is more aggressive than the visible limit price of the Iceberg order. Such an order is referred to as Volume Discovery Order. Volume Discovery Orders will behave just like Iceberg orders for matching in the visible order book and will be entered as Iceberg orders with the additional parameter Volume Discovery Price (volDiscPrc). The hidden quantity of a Volume Discovery Order has to be greater than or equal to the Volume Discovery Order Minimum Executable Volume.

Incoming Volume Discovery Orders will be executed first in the visible order book when this is possible. After all matching possibilities in the visible order book are exhausted, execution of Volume Discovery Orders at the midpoint between best bid and best ask will take place, according to the following preconditions and principles:

- It is possible to calculate a midpoint price from the visible order book.
- The hidden volume of Volume Discovery Orders is executable at the midpoint up to the specified Volume Discovery Price.
- The midpoint price is within the volatility ranges.
- Executions of hidden volume at the midpoint are at least for the specified Volume Discovery Order Minimum Executable Volume per order.
- If several Volume Discovery Orders are available on the same side of the order book, the Volume Discovery Orders with hidden volume of at least Minimum Executable Volume are matched according to price-time priority of the visible part.
- The visible peak of a Volume Discovery Order cannot be matched at the midpoint and remains unchanged.

With Release 6.0, T7 will be enhanced with a new time in force restriction Good Till Crossing/ Auction (GTX), which can be set only for Volume Discovery Orders. A Volume Discovery Order entered with the restriction GTX will be deleted at the start of an auction or in case of volatility interrupt. Volume Discovery Orders can be entered only during continuous trading.

Iceberg orders cannot be modified to Volume Discovery Orders, but it is allowed to modify a Volume Discovery Order to an Iceberg order.

2.2.3 Designated Sponsor Quote Request

With T7 Release 6.0, Participants will have the possibility to decide who will be informed about their Request for Quote (RfQ): either all Participants, or Market Makers and Designated Sponsors, or only the Designated Sponsors of the instrument for which the RfQ is sent.

Additionally, for each individual RfQ, Participants will be able to decide if their business unit ID is disclosed to the target Participants of the RfQ, i.e. to all market Participants, or to Market Makers and Designated Sponsors, or only to the Designated Sponsors of the instrument.

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

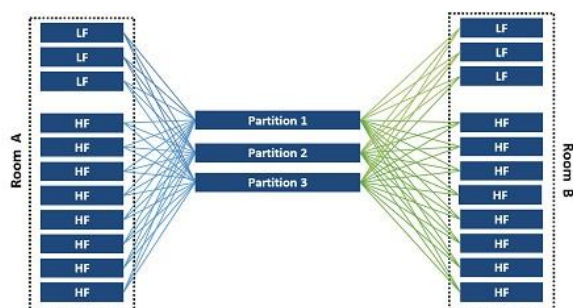
2.3.1 Partition Specific Gateways

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.

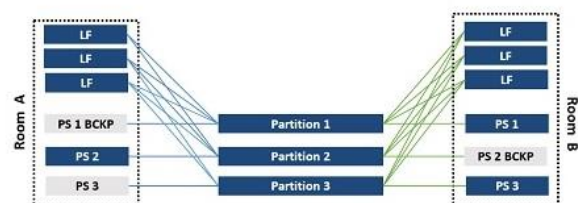
Currently, the T7 trading system offers multiple paths into the matching engine via its gateways. In recent years, the development in technology has massively decreased processing times of exchanges and reaction times of Trading Participants. This leads to several issues with the multi-gateway architecture,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



Current setup
(Only 3 partitions shown for simplicity)



Setup after migration to partition specific gateways

increase predictability, reduce multiplicity and mitigate the challenges for trading surveillance. HF gateways will be replaced by partition specific gateways step by step, 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 a combination of LF and partition specific gateways will be used. 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 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 Gateway Introduction Schedule for Simulation

The Partition Specific Gateways will be introduced in production after the production introduction 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/ EEX Derivatives¹
- 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 Xetra 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, ValueCheckTypeQuantity) to allow the skipping of the Order Value validation in the messages:
 - New Order Single
 - Mass Quote
 - Replace Order Single
- 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)
 - Mass Quote
 - Replace Order Single (short and regular layout)
 - BEST Quote
- 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)

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

2.3.3.2 Enhancements regarding Xetra BEST

For Xetra BEST, the following enhancements will be made in ETI:

- A new BESTExecIndicator in the New Order Single message.
- New BEST Quote message for BEST Quote entry and the respective BEST Quote response.
- The Execution Type parameter in the Order Execution Response message will include information regarding BEST Trade.
- BEST Quote Execution Notification.
- Trade Notification message.

2.3.3.3 Enhancements regarding Volume Discovery Service

The new field discretionOffsetValue for the Volume Discovery Price will be introduced in the Order Entry and Modify Messages, as well as in the Extended Deletion report and the Order Execution Report broadcast. The new Time in Force "GTX" and order expiration reason "148" in the execRestatementReason field will be included in the relevant messages as well.

2.3.3.4 Enhancements regarding Designated Sponsor Request for Quote

With T7 Release 6.0, the RfQ request message in T7 ETI will be enhanced with the receiver scope of the RfQ: public, Market Maker and Designated Sponsor, or only Designated Sponsor. Thus the entering user will have the possibility to define who will receive the RfQ. Additionally, a new field BusinessUnitID will be added to the RfQ request, allowing the entering user to specify his or hers business unit ID in order to disclose it.

2.3.4 Market Data and Reference Data Interface Changes

2.3.4.1 Enhancements regarding the MiFID II Regulatory Requirements

Post-trade transparency provision – a new flag AlgorithmicTradeIndicator will be introduced in T7 EMDI and EOBI to indicate an algorithmic trade based on the value of the ExecutionTraderIndicator in the Order and Quote messages.

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

The T7 RDI Instrument Snapshot message will be enhanced to show the Market Making Obligation flag as additional instrument attribute, T7 RDF will be updated accordingly.

2.3.4.2 Enhancements regarding Xetra BEST

Trades resulting from BEST Execution will be flagged accordingly in the EMDI and MDI messages. BEST trades affect the Trade Volume Report. The accumulated on-exchange Trade Volume per instrument will be completed with the BEST Trade Volume published as separate information (last BEST price/ quantity/ time, total BEST volume as well as number of trades).

2.3.4.3 Enhancements regarding Volume Discovery Service

Trades resulting from Volume Discovery Order midpoint execution will be reported in the Trade Report message with a new Match Type "VDO Midpoint". The T7 EMDI and MDI messages will be enhanced to provide information for trades resulting from Volume Discovery Order execution at midpoint.

The accumulated on-exchange Trade Volume per instrument will be completed with the Volume Discovery Order Trade Volume published as separate information (last Volume Discovery Order price/ quantity/ time, total VDO volume as well as number of trades).

2.3.4.4 Enhancements regarding Designated Sponsor Quote Request

T7 MDI will publish RfQ data, depending on the defined scope of the RfQ.

2.4 T7 Trader and Admin GUI

2.4.1 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
- 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 Order View and Order History View.
- The Stressed Market Conditions status will be shown in the Market and Instrument Statistics views.

2.4.2 . Enhancements regarding Xetra Best

The Xetra Trader and Admin GUI will be enhanced to support the BEST functionality:

- The Order Entry panel will be enhanced with the flag BEST to enter BEST Orders.
- The OrdType field will be set to BEST in the Orders and Order History views to indicate BEST Orders.
- BEST trades will also be displayed in the Trades view with a specific trade type.
- BEST trades will be displayed in the Product and Instrument Statistics view.

2.4.3 Enhancements regarding Volume Discovery Order

The T7 Trader and Admin GUI will be enhanced to support the Volume Discovery Order functionality:

- The Order Entry panel will be enhanced with the flag *VDOLimit* to enter the Volume Discovery Price.
- The Orders and Order History views will be enhanced with the field *VDOLimit*.
- A Volume Discovery midpoint trade will also be displayed in the Trades view with a specific trade type.
- Volume Discovery midpoint trades will be displayed in the Product and Instrument Statistics view.

2.5 Reports

The following new reports will be introduced with T7 6.0:

- TR101 – MiFID II OTR Report - this report provides each member with his daily values of OTRno and OTRvol per ISIN
- 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.
- TR901 - MiFID II Message Rate Report - this report contains the message rates under Directive 2014/65/EU Article 40(c).

There will be changes in the following existing reports:

- TC540 – Daily Order Maintenance:
 - several new tags are added to the report: *Client Identifier, Investment Identifier, Investment Qualifier, Execution Qualifier, Execution Identifier, LiquidityProvActivity*.
 - The trading capacity for BEST orders and the second limit price and time in force GTX for Volume Discovery Orders will be reflected in the report as well.
- TC550 – Open Order Detail:
 - several new tags are added to the report: *Client Identifier, Investment Identifier, Investment Qualifier, Execution Qualifier, Execution Identifier, LiquidityProvActivity*.
 - Volume Discovery Orders will be reflected in the report as well.
- TC810 – Daily Trade Confirmation:
 - the tag *Cust* is removed from the report.
 - BEST trades and Volume Discovery midpoint trades will be reflected in the report as well.
- TD930 – Daily Trade Statistics – Best trades and Volume Discovery midpoint trades will be reflected in the report.
- The Fee reports CB042, CB052, CB060, CB062, CB068, CB080 the member is represented by Participant and Business Unit.
- RD110 - User Profile Maintenance – derivatives specific attributes TES Type and TES Eligibility have been moved to a separate group.
- RD115 - User Profile Status – report is enhanced with two new capacity types for BEST and Risk Less Principal as well as with Maximum Order Quantity.

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 Xetra 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. 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.

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.xetra.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. Participants 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
- 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

- New / changed tick size regime and order conversion
- Stressed market conditions / exceptional circumstances
- IPO
- Corporate Actions
- Product Halt
- Instrument Suspend

Recommended Test Scenarios to be executed by participants

- Volume Discovery Order (VDO)
- Xetra Best
- Market Maker Liquidity Provision flag
- Pre-Trade Controls
- Audit Trail Reporting
- Designated Sponsor Request

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 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 Gateway Failover focus day scenario will be offered between 15:00-16:00 CET.

4.1.3 Matching Engine Failover and Failure, EOB 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.

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 simulation. Public market data information from EOBI will be provided in packages/UDP datagrams marked with a *MarketSegmentID*, i.e., product identifier; *PartitionID*; *AppSeqNum* (continuous numbering format); Packages are sent over redundant multicast address and port combinations. Each package is uniquely identified by its *MarketSegmentID* and *AppSeqNum* 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 *AppSeqNum* 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 *AppSeqNum* 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.

➔ 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 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.

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 website 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 1 deleting all existing mapping and part two restoring the original session to gateway mappings.

4.1.6 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.

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

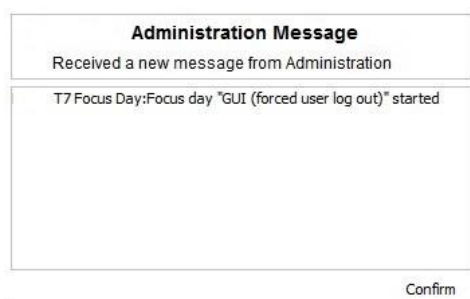
4.1.7 GUI (forced user log out)

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

4.1.7.1 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.

4.1.7.2 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.

4.1.7.3 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.

4.1.8 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 below 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 www.xetra.com -> Trading -> Trading calendar and trading hours

4.2.1 New / changed tick size regime and order conversion

According to the tick size regime that will be introduced with MiFID II, ESMA will provide tick size tables to the trading venues. These tables may trigger tick size and price step adjustments for some products in T7.

On the Focus Day “Tick Sizes”, members should have open orders in the affected instruments. During the end-of-day processing, the tick sizes will be updated and all active orders in the book in the respective instruments will be deleted. In order to identify the reason for the deletion due to tick size amendment, a new deletion reason code “Tick Size Change” (CTR) will be introduced. Please note that all affected active orders will be deleted.

The affected products will be published via Implementitions News as part of the announcement for this focus day.

4.2.2 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.

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.

4.2.3 Corporate Actions

DBAG will trigger a corporate action in dedicated instruments. The approach will be as following:

The day the focus day is announced, DBAG will maintain the Cum indicator, the Ex date and the dividend amount for the respective instrument.

On the next simulation business day, the Participants will see the Cum-Indicator. The Participants then should have open orders in POSTR with validity > T. These orders will be deleted during the following batch run. Furthermore, the deletion messages including the order deletion reasons will be sent.

On the following business day, (Ex-day) the Participants see the Ex indicator and the reference price is reduced accordingly by the dividend amount.

4.2.4 IPO

An IPO auction is used for the inclusion of an instrument in the secondary market and is a special version of an auction. Like in an auction, orders and quotes can be entered, modified and deleted.

In contrast to the standard auction Market Supervision is able to enter a matching range on behalf of the lead bank during the IPO auction call phase. The price determination is restricted to this price range.

Market participants will only be informed about the price range. Market data will not be published at any time of the IPO auction phase. Before the IPO auction is manually terminated, Market Supervision is setting the instrument state from Auction to Freeze in order to control the order book situation. During this state, any activity that changes the order book is not possible.

After the IPO auction is terminated by Market Supervision the auction price determination takes place. The IPO auction is directly followed by an intraday auction call phase.

This focus day will allow the members to practice the interaction of their activities regarding the first price determination after an initial public offering (IPO). The focus will encompass the common trading and processing features in initial public offering. The actions will be focused on equities.

4.2.5 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)

4.2.6 Instrument Suspend

As a possibility to reflect an instrumentsuspend in T7, DBAG has planned one Instrument Suspend on a predefined focus day. This test will be done on an intraday basis between 14:00 and 14:30 CET.

Test scenario and expected result:

Prior to the planned Instrument Suspend participants are recommended to enter non persistent- and persistent orders and quotes in the affected instrument. As a result this instrument will not be tradable between the given times in T7. In this scenario all orders (persistent and all non-persistent) and all quotes will be deleted after the market reset and participants must re-enter them. 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 Volume Discovery Order, VDO

The Volume Discovery Service in T7 Release 6.0 will offer access to “dark” and “lit” liquidity. This new service will combine the execution of an Iceberg order in the open order book with the execution of the hidden part of the Iceberg order at the midpoint against other orders of this type.

The hidden part of an Iceberg order may be executed against other orders of this kind at the current midpoint of the Xetra order book up to a second limit price (Volume Discovery Price) that is more aggressive than the visible limit price of the Iceberg order. Such an order is referred to as Volume Discovery Order. Volume Discovery Orders will behave just like Iceberg orders for matching in the visible order book and will be entered as Iceberg orders with the additional parameter Volume Discovery Price (volDiscPrc). The hidden quantity of a Volume Discovery Order has to be greater than or equal to the Volume Discovery Order Minimum Executable Volume.

For this test scenario Deutsche Börse will generate a number of Volume Discovery Orders in the following instruments:

- AT0000730007 <- Deutsche Börse will buy orders
- DE0005200000 <- Deutsche Börse will sell orders

4.3.2 Xetra Best

The BEST functionality that T7 will offer with Release 6.0 will guarantee an execution price better than the price within the current order book by routing of customer orders from Flow Providers to specific other market Participants acting as BEST Executors. Beyond this, within BEST functionality all orders will be executed against the BEST Executor's quote in their full size. Hence no partial executions occur.

The Xetra BEST Execution functionality will enable business units, which do not provide a best execution facility themselves, to route their order flow to a BEST Executor. Such business units are called Flow Providers. The BEST Executor will provide BEST Execution for the customers of these Flow Providers. One BEST Executor can serve several Flow Providers, but one Flow Provider can send his orders to only one designated BEST Executor.

During the test scenario, BEST executors are requested to provide a flow of BEST quotes in a number of pre-defined instruments.

These BEST quotes will have relative price limits that dynamically adjust according to the top of the order book.

Flow Providers are requested to match these generated BEST quotes during the test scenario.

4.3.3 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. In this test scenario, members are requested to test the functionality by entering orders/quotes, which are expected to trigger the validations, mentioned above.

4.3.4 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 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. 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, members 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.

Please note: Until participants have uploaded valid values, the corresponding field will be filled with default values. Details regarding of the “Short Codes” will be provided separately via circular.

4.3.5 Designated Sponsor Quote Request

In this test scenario, members are requested to send RfQs particularly to Designated Sponsors.

With T7 Release 6.0, Participants will have the possibility to decide who will be informed about their Request for Quote (RfQ): either all Participants, or Market Makers and Designated Sponsors, or only the Designated Sponsors of the instrument for which the RfQ is sent.

For each individual RfQ, Participants will be able to decide if their business unit ID is disclosed to the target Participants of the RfQ, i.e. to all market Participants, or to Market Makers and Designated Sponsors, or only to the Designated Sponsors of the instrument.

6. 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.

6.1 Contacts and support hours

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

6.1.1 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

6.1.2 Functional Helpdesk Xetra

Phone: +49 (69) 211 - 1 14 00 (09:00 - 18:00 CET)

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

6.1.3 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

6.1.4 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

6.2 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 the Xetra website under following path:

www.xetra.com -> *Technology* -> *Implementation News*

7. 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 T7 Release 6.0 Simulation