

T7 Release 8.0 Börse Frankfurt

Pre-Production Execution Guide

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Abstract

This document describes the timeline and focus days for the T7 Release 8.0 Börse Frankfurt pre-production period. Trading participants should use this document to plan and prepare their T7 Release 8.0 Börse Frankfurt pre-production participation. This document should be read alongside the **T7 RELEASE 8.0 RELEASE NOTES**, all required technical interface descriptions, the **Börse Frankfurt Pre-Production PRE-PRODUCTION CALENDAR** and the regularly updated **IMPLEMENTATION NEWS** on.

www.xetra.com > Technology > Implementation News

www.xetra.com > Technology > T7 trading architecture > System documentation > Release 8.0 > Pre-Production

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, T7 Clearer GUI, T7 Trade Entry Services

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1. Definitions and Abbreviations

Term	Explanation
BF	Börse Frankfurt
BFZ	Börse Frankfurt Zertifikate
CCP	Central Counter Party
CRE	Common Report Engine
DBAG	Deutsche Börse AG
EOBI	T7 Enhanced Order Book Interface
ETI	T7 Enhanced Trading Interface
FIX	Financial Information eXchange protocol
FWB	Frankfurter Wertpapierbörse
GUI	Graphical User Interface
ISV	Independent Software Vendor
MDI	T7 Market Data Interface (netted)
RDI	Reference Data Interface
RDF	Reference Data File
TES	T7 Entry Services
T7	T7 trading system developed by Deutsche Börse Group

2. Börse Frankfurt Pre-Production Overview

2.1 Introduction

The purpose of the T7 Release 8.0 Börse Frankfurt pre-production is to provide an opportunity for participants and ISVs to become familiar with the functional and technical setup and features of T7 Release 8.0 and to prepare for production.

In order to ease the big bang migration of the trading venue Börse Frankfurt (i.e. including Börse Frankfurt Zertifikate, XFRA) to T7 on 9 March 2020, the dedicated production environment will be made available to participants starting 28 October 2019 as a pre-production environment. This will allow participants to set up and test their T7 Börse Frankfurt applications in a production like way, i.e. in the same way they will use them in production later.

The key objectives of the T7 Release 8.0 Börse Frankfurt pre-production:

- Provide high quality information to support participant and ISV readiness.
- Familiarize participants with the T7 trading services functionality and particularly the special attributes of the Börse Frankfurt market.
- Early identification of issues both from the Exchange and from the participants' side to minimize risk of T7 Börse Frankfurt launch and production operation.

The “**T7 Börse Frankfurt Pre-Production**” will be made available to participants starting from **28 October 2019** and continue until **28 February 2020**. With the migration in March 2020, the pre-production environment will become the actual production environment for T7 Börse Frankfurt.

In order to offer participants the possibility to continue to test the T7 Börse Frankfurt applications, particularly when the pre-production environment is prepared for the production start, the **dedicated simulation environment** for T7 Börse Frankfurt **will start on 17 February 2020**.

In addition to the Börse Frankfurt T7 Release pre-production and Simulation environments, Deutsche Börse AG offers a T7 Release 8.0 Cloud Simulation to allow trading participants and ISVs to test against the Börse Frankfurt pre-production / Simulation software. Participants can initiate predefined market scenarios and test specific strategies more easily in the Cloud Simulation than in a shared environment (as the pre-production). The Cloud Simulation is available around the clock for a fixed price per hour and started on 9 August 2019.

The production launch date for Börse Frankfurt's T7 Release 8.0 is planned for 9 March 2020.

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

2.2 Intended audience

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

- 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 Pre-Production Execution Guide to the appropriate project teams and line organizations 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 pre-production .

2.3 Timeline

Deutsche Börse AG is planning to launch Börse Frankfurt T7 Release 8.0 of T7 on 9 March 2020.

The following timeline gives an overview of the introduction schedule:

T7 8.0 Cloud Simulation Start	9 August 2019
T7 8.0 Pre-Production Execution	28 October 2019 – 28 February 2020
T7 8.0 Börse Frankfurt Simulation Start	17 February 2020
T7 8.0 Börse Frankfurt Production Migration	1 March - 8 March 2020
T7 8.0 Börse Frankfurt Production Launch	9 March 2020

2.4 Pre-Production Calendar

The Pre-Production Calendar for Börse Frankfurt is available under the following path:

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

Please note: The batch schedule in the pre-production from 28 October 2019 until 28 February 2020 has been aligned with the participating **simulation systems** (e.g. Central Counter Party for settlement services). The batch days during this period also do not differ from the batch days of the T7 8.0 Release Simulation.

2.4.1 Guiding principles for the Pre-Production Calendar

- The dedicated T7 production environment for Börse Frankfurt will be made available to participants starting 28 October 2019 as a pre-production environment. Pre-Production will be set up and run from both a functional and technical perspective as production-like as possible to help simulating business processes under realistic conditions.
- The T7 Release 8.0 Börse Frankfurt pre-production is planned to start on 28 October 2019 and will last until 28 February 2020. All functional and technical preparations should be completed by the ISVs and participants before the start of the pre-production.
- 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 pre-production, but no technical and functional support will be available.

2.5 Börse Frankfurt Pre-Production Documentation

It is strongly recommended that all participants read the Release Notes, Functional Reference, Functional and Interface Overview and other relevant documentation in order to successfully execute the Börse Frankfurt pre-production and migration to T7.

All T7 Release 8.0 relevant documentations can be found on:

[Xetra.com](https://www.xetra.com) > Technology > T7 trading architecture > System documentation > Release 8.0

3. Pre-Production preparation

Preparation activities should be completed prior to the start of T7 Release 8.0 Börse Frankfurt pre-production.

3.1 Organisational preparation

Prior to the start of T7 Release 8.0 Börse Frankfurt pre-production, the following organisational preparatory activities need to be completed by all participants to ensure readiness for the pre-production phase:

- All participants and ISVs will be asked to name a person acting as a single point of contact (SPoC) during the pre-production . This person shall coordinate all internal activities, functional as well as technical, and shall communicate with affiliated participants during pre-production, 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 -> Contacts -> Release Contacts -> Cash Market
- Documents will be made available in order to facilitate and support general pre-production needs. However, in order to simulate the individual requirements participants are encouraged to define specific pre-production objectives and scenarios on their own.
- Personnel for participation in pre-production on the focus days (specified in the pre-production calendar) should be identified and confirmed.
- Participants are encouraged to set up an internal issue management process. Please make sure that you are receiving the circulars and newflashes.

3.2 Functional preparation

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

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

3.3 Pre-Production Environment Preparation

At the start of the pre-production, the current member and users set up for Börse Frankfurt including their entitlements will be copied from existing Börse Frankfurt production trading system. In addition, members (including service providers and ISVs) from the existing Börse Frankfurt simulation system will also be loaded into the pre-production environment. The cutoff date of existing Börse Frankfurt production / simulation input data for member and user data is 11 October 2019. Changes to participant data performed after the cutoff date will need to be performed in the existing Börse Frankfurt production system **and** in T7.

IP addresses used for pre-production will remain the same for the production later on, which will run on the same instance. In line with this, the following applies for sessions: Since 19 September Participants are able to order production sessions for the pre-production execution phase which will be used later for trading in production on T7. To be clear, the pre-production setup is identical to production. The session ordering process is handled as usual via the Cash Market Member Section (--> Technical Connection).

Please note:

- T7 Börse Frankfurt can be accessed by Low-Frequency ETI sessions, FIX sessions or GUIs.
- Dedicated FIX sessions have to be ordered for T7 Börse Frankfurt.
- Multicast addresses setup for EOBI, MDI, and RDI will be kept for production as well as FIX and ETI Gateway addresses.

A temporary ordering of sessions via SAP for vendors and test members for the pre-production environment will be made possible.

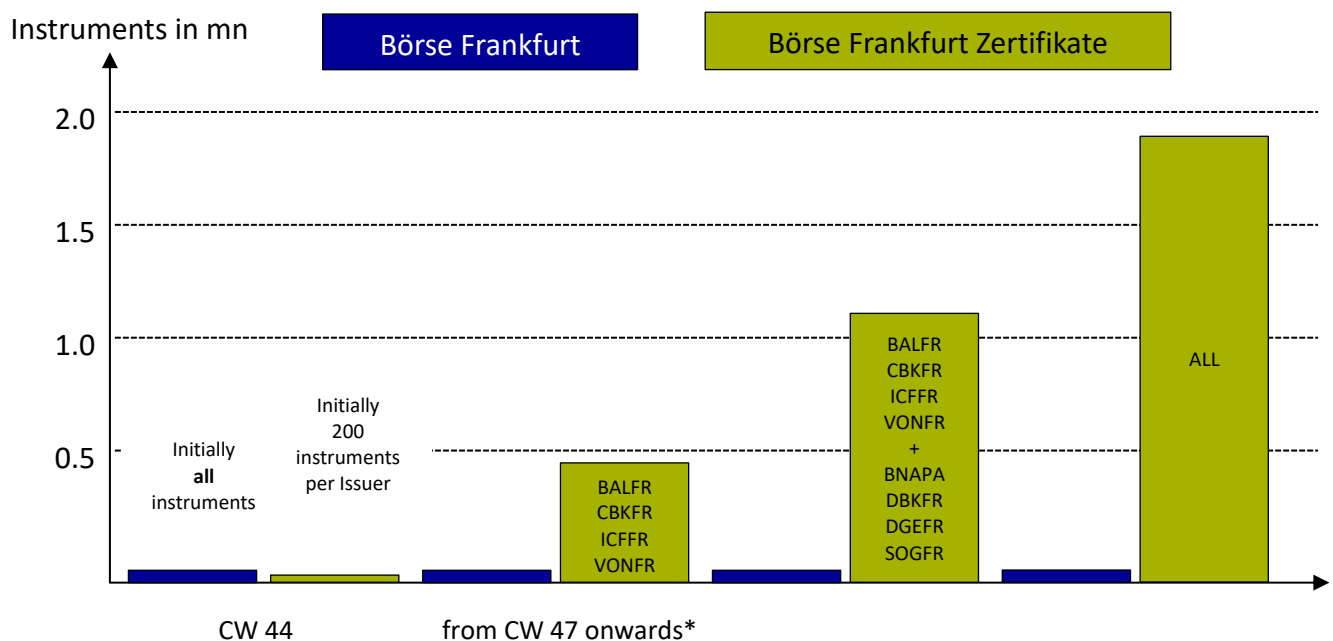
3.4 Instruments and Liquidity Providing Scripts

3.4.1 Instrument Setup

The load of instruments in the pre-production environment is planned in several consecutive steps/loads.

The approach is based on the following guiding principles:

1. Possibility to test all asset classes early on
2. Possibility to provide at least one instrument to all Specialists in T7 Börse Frankfurt
3. Possibility of issuers to test using their own instruments
4. Possibility of BFZ Specialists to test a full set of instruments of an issuer early on
5. Staggered upload instrument reference data in packages so customers can better cope with the large amount of instruments in the new T7 trading system



*Exact dates will be communicated via Implementation News 1 week in advance.

Please note:

- upon Instrument load days, pre-production will close at 2 p.m.
- Instrument updates based on production changes will be applied during each pre-production end-of-day processing once the instrument is listed.
- Please note that the instrument updates will have a delay of at least one day due to the trading calendar used (Pre-Production Calendar) and the early simulation-like end-of-day processings of T7 Börse Frankfurt pre-production.
- Intra-day Knock-Outs of the existing Börse Frankfurt production trading system will be reflected in the following end-of-day processing in T7.¹
- Please note that all Börse Frankfurt Zertifikate instruments listed as bonds on the existing Börse Frankfurt Trading System will be listed as warrants on T7 Börse Frankfurt. Börse Frankfurt bonds with unit quotation are listed as equities on the existing Börse Frankfurt Trading System. These equities will be listed as bonds in T7.

3.4.2 Instrument Maintenance

The following tasks and processes will be performed by DBAG regularly in order to improve/ensure the quality of pre-production and its trading related data:

- Processing of trading suspensions, resumptions and knockouts to mirror the real production environment
- Maintenance of validation rules and data
- Modifications of instrument parameters
- Deletions of instruments

3.4.3 Supported Instruments

Cash Market Operations will be able to enter matching Quotes via the MS Control GUI to generate trades on participant request. For following instruments a DBAG member will be the Specialist (and Issuer) during pre-production:

Supported Instruments:

DE0001142693

DE0001102408

DE0001104743

XS0205545840

XS0553728709

SE0002829192

¹ This does not apply to KO-Messages sent via FIX/ETI. These messages are executed immediately.

AU000000AUZ8
CA25260V1031
USY384721251
AT00000VIE62
DE0007018509
DE000A1E8G88
AU0000XCLWV6
DE000A1Z3XR4
DE000A0MS7D8
DE0005152375
DE000DZ42N68
DE000DGE1WG2
DE000TR18QNO
DE000VF1D5N7
XS2028085731
DE000HVB3LY4
DE000GT6SC28
XS2029617979
DE000SG06BX1
DE000CU42B50
DE000CP51988
AT0000A22PL4
DE000VL3TBC7
DE000VA5MY28
DE000HY3X0E1
DE000PZ8BEX6

3.4.4 Liquidity provision for Börse Frankfurt Pre-Production

Liquidity is provided for a selection of instruments by DBAG.

The list of all instruments also including the test scenario instruments can be found on the Xetra website under the following path:

[Xetra.com](https://www.xetra.com) > Technology > T7 Trading Architecture > System documentation > Release 8.0 > Pre-Production

3.5 T7 Report Distribution

T7 report distribution will be done exclusively via the Common Report Engine.

Details can be found in the document “Common Report Engine User Guide” and the “XML Reports – Reference Manual” with the accompanying “Modification Notes”.

Please note:

- Börse Frankfurt pre-production report filenames start with '61' (the CRE destination number for Börse Frankfurt production reports). exactly as the reports from the existing Börse Frankfurt trading system.
- The existing Börse Frankfurt production reports and Börse Frankfurt T7 pre-production reports can be distinguished from each other by the addition 'T7' in the T7 file name.
- The CRE destination will not change during the transition from pre-production to production.

The following reports will be available during pre-production:

- Specialist-Performance Reports

(Available in pre-production from 28.10.2019 to 02.03.2020)

Report	Frequency	Format	File Name (Example)
PR001	daily	TXT	61RPTPR001MEMID20190710XFRAT7.TXT.ZIP
PR002	daily	TXT	61RPTPR002MEMID20190710XFRAT7.TXT.ZIP
PR003	daily	TXT	61RPTPR003MEMID20190710XFRAT7.TXT.ZIP
PR004	daily	TXT	61RPTPR004MEMID20190710XFRAT7.TXT.ZIP
PR005	monthly	TXT	61RPTPR005MEMID20190710XFRAT7.TXT.ZIP
PR006	daily	TXT	61RPTPR006MEMID20190710XFRAT7.TXT.ZIP
PR007	daily	TXT	61RPTPR007MEMID20190710XFRAT7.TXT.ZIP
PR008	weekly	TXT	61RPTPR008MEMID20190710XFRAT7.TXT.ZIP

- Billing Reports

(Available in pre-production from 27.01.2020 to 02.03.2020)

Report	Frequency	Format	File Name (Example)
CB142	daily	XML+TXT	61RPTCB142MEMID20190613XFRAT7.XML.ZIP
CB242	daily	XML+TXT	61RPTCB242MEMID20190613XFRAT7.XML.ZIP
CB243	daily	XML+TXT	61RPTCB143MEMID20190613XFRAT7.XML.ZIP
CB162	monthly	XML+TXT	61RPTCB162MEMID20190613XFRAT7.XML.ZIP
CB150	daily	XML+TXT	61RPTCB150MEMID20190710XFRAT7.TXT.ZIP
CB250	daily	XML+TXT	61RPTCB250MEMID20190710XFRAT7.TXT.ZIP
CB253	daily	XML+TXT	61RPTCB253MEMID20190710XFRAT7.TXT.ZIP
CB160	monthly	XML+TXT	61RPTCB160MEMID20190710XFRAT7.TXT.ZIP
CB260	monthly	XML+TXT	61RPTCB260MEMID20190710XFRAT7.TXT.ZIP
CB263	monthly	XML+TXT	61RPTCB263MEMID20190710XFRAT7.TXT.ZIP

- RTS24 Short-/long code & Algo Reports

(Available in pre-production from 28.10.2019 to 02.03.2020)

Report	Frequency	Format	File Name (Example)
TR160	daily	XML	61RPTTR160MEMID20190613XFRAT7.XML.ZIP
TR161	daily	XML	61RPTTR161MEMID20190613XFRAT7.XML.ZIP
TR162	daily	XML	61RPTTR162MEMID20190613XFRAT7.XML.ZIP
TR163	daily	XML	61RPTTR163MEMID20190613XFRAT7.XML.ZIP

- OTR Reports

(Available in pre-production from 28.10.2019 to 02.03.2020)

Report	Frequency	Format	File Name (Example)
TR101		XML +TXT	61RPTTR101MEMID20190710XFRAT7.TXT.ZIP

- Further Trading Reports (same filename description as above)

CB Clearing Position and Transactions

CB068

Trading RDS Reports

RD110

RD115

RD130

RD135

Order and Quote Maintenance

TC230

TC540

TC545

TC550

TC600

TC610

TC810

TC812

TC910

Trading Volumes And Performance

TD930

Trading Regulatory

TR901

Entitlement and Security

TT133

TT135

For more information please refer to the XML Reports Reference manual on:

www.xetra.com > Technology > T7 Trading architecture > System documentation > Release 8.0 > Reports

3.6 Reference Data Pre-Production

During pre-production participants will receive the Instrument Reference Data via the Common Report Engine (CRE), Member Section Xetra public webpage and RDI.

On the Common Report Engine the Reference Data Files (T7 RDF) will be available for all pre-production business days via the existing CRE Production Destination 61 for Börse Frankfurt. They are generated one time per day and created during each Start-Of-Day. The following file names should serve as an example:

Static Files (common for BF and BFZ)

61FILRDF02PUBLI20190506XFRA.ZIP

RDF listing all instruments (XML) + All Tradeable Instruments File listing all instruments (CSV)

61FILRDF01PUBLI20190506XFRA6CMHD000.XML.ZIP

61FILRDF01PUBLI20190506XFRA6CMHD000.CSV.ZIP

RDF listing only instruments of Börse Frankfurt (XML) + All Tradeable Instruments File listing only instruments of Börse Frankfurt (CSV)

61FILRDF03PUBLI20190506XFRA6CMHD000.XML.ZIP

61FILRDF03PUBLI20190506XFRA6CMHD000.CSV.ZIP

RDF listing only instruments of BFZ (XML)+ All Tradeable Instruments File listing only instruments of BFZ (CSV)

61FILRDF04PUBLI20190506XFRA6CMHD000.XML.ZIP

61FILRDF04PUBLI20190506XFRA6CMHD000.CSV.ZIP

RDF listing only instruments of BFZ assigned to Specialist BALFR (XML) +All Tradeable Instruments File listing only instruments of BFZ assigned to Specialist BALFR (CSV)

61FILRDF05PUBLI20190506XFRA6CMHD000.XML.ZIP

61FILRDF05PUBLI20190506XFRA6CMHD000.CSV.ZIP

RDF listing only instruments of BFZ assigned to Specialist ICFFR (XML) +All Tradeable Instruments File listing only instruments of BFZ assigned to Specialist ICFFR (CSV)

61FILRDF06PUBLI20190506XFRA6CMHD000.XML.ZIP

61FILRDF06PUBLI20190506XFRA6CMHD000.CSV.ZIP

Reference Data Files available in the Cash Market member section:

In the Cash Market member section the Reference Data Files (T7 RDF) will be available for all pre-production business days on the path:

Xetra.com / Member Section / Cash Market Member Section / Cash Market Resources / Instruments / Börse Frankfurt

Static Files (common for BF and BFZ)

61FILRDF02PUBLI20190506XFRA.ZIP

RDF listing all instruments

61FILRDF01PUBLI20190506XFRA6CMHD000.XML.ZIP

RDF listing only instruments of Börse Frankfurt

61FILRDF03PUBLI20190506XFRA6CMHD000.XML.ZIP

RDF listing only instruments of BFZ

61FILRDF04PUBLI20190506XFRA6CMHD000.XML.ZIP

Reference Data Files available on the public Cash Market website:

Instrument reference data for all pre-production business days will be available on the public website xetra.com on the path: Instruments > All tradable instruments

Static Files (common for BF and BFZ)

T7 (XFRA) Static Instrument Reference Data

All Tradeable Instruments File listing all instruments

T7 (Börse Frankfurt und Börse Frankfurt Zertifikate) All tradable instruments

All Tradeable Instruments File listing only instruments of Börse Frankfurt

T7 (Börse Frankfurt) All tradable instruments

All Tradeable Instruments File listing only instruments of Börse Frankfurt Zertifikate

T7 (Börse Frankfurt Zertifikate) All tradable instruments

Reference Data Interface (T7 RDI)

The Reference Data Interface provides reference data for products and instruments that are available for trading on T7.

3.7 Upload of RTS24 Short- / long code and Algo certificates

The upload of the RTS24 Short- / long codes and the certified Algo IDs for the pre-production will be done through the simulation channels of the Cash Market Member Section or via SFTP as follows.

Please note:

The existing mappings from the current production will be taken over for pre-production

Upload via the Cash Market Member Section:

In the "Client Identification Upload" mask the participant selects the market "XFRA" and the environment "Simulation". As of 28.10.2019 all uploads for XFRA will be identified as pre-production test files.

After uploading, these files will be processed for the CRE XFRA Production Destination (61).

Upload via the SFTP server:

The participant selects the simulation IP address of the SFTP client (via Internet: 194.36.239.242 Port 24, via Leased Lines 193.29.90.72 or 193.29.90.104 Port 2242).

The files are uploaded to the Cash_Market_XETR_XFRA folder.

Using the MIC code in the name of the files, DBAG can distinguish the files for XETR from XFRA (for example, RTS2420191028XFRAGDBXX...csv_zip). As of 28.10.2019, all simulation uploads for XFRA will be considered as pre-production test files.

After uploading, these files will be processed here for the CRE XFRA Production Destination (61). The

"Response/Error Files" contain the T7 indicator in their name (e.g.

61RPTTR161BALFR20191028XFRAT7.TXT).

Participants will be informed explicitly that the upload will be done via the simulation channels, however, the error reports will arrive in CRE's production directories.

3.8 Technical preparation

In order to ensure technical readiness for pre-production, Members / ISVs should consider the following topics:

- The changes for the following interfaces have to be implemented
 - T7 Enhanced Trading Interface ETI
 - 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 pre-production software should be identified and confirmed.
- Related in-house systems should be set up to simulate subsequent processing.

4. Focus Day and Test Scenarios – Overview

In the overview below, all focus days offered during the pre-production are listed and described. These chapters outline which focus days will be offered and the general concept of these. The exact dates for the focus days are displayed in the Pre-Production calendar available on the website:

www.xetra.com > *Technology* > *T7 trading architecture* > *System documentation* > *Release 8.0* > *Pre-Production*

Focus days are planned and triggered by the Exchange. Specific actions must be done by the Exchange to enable the scenario of the focus days. Focus days can be of a technical nature (e.g. system failure), or of a functional nature (e.g. corporate action). In either case participants cannot test without the Exchange taking action first.

Recommended test scenarios on the other hand can be done by the participants without any 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.

Technical Focus Days : triggered by DBAG:

- Matching Engine Failover and Failure, EOBI Failure
- FIX Gateway Failover
- Market Data Services Failure
- GUI (forced user log out)

Functional Focus Days: triggered by DBAG:

- Instrument Knock-Outs
- Order Deletion
- Quote Request Driven Trading
- Special Auction (On request only)
- Corporate Actions
- Market Halt (On request only)
- Trading Halt on Product level (On request only)
- Instrument Stop (On request only)
- Instrument Suspend (On request only)
- Trade Reversals (On request only)

Recommended Test Scenarios:

- Locked Stock
- Non-CCP eligible Instruments

4.1 Technical Focus Days – Triggered by DBAG

Technical focus days will be offered on several occasions during the simulation and will be triggered by DBAG. 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 orderbook- and session management systems.

4.1.1 Matching Engine Failover and Failure, EOBI Failure

The T7 pre-production 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 the pre-production phase, a failover and a failure of a matching engine will be simulated.

Matching Engine Failover

As a precondition, specialists are advised to enter standard quotes in the pre-production 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.

Because of the failover, the products from the failed partition will still be tradable. A Market Reset Event message will be triggered. Standard quotes which were inserted earlier will be deleted after the restore of the order book.

Afterwards an order book replay will be sent. Participants with low frequency sessions (via ETI or FIX) will receive an extra end of replay message on product level.

The Matching Engine failover triggers automatically an EOBI failover.

Matching Engine Failure

For the execution of a matching engine failure both matcher processes will be crashed for a partition in pre-production. The test case will have an impact on all products available on this partition in pre-production. 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), i.e. they should try to send orders on any instrument belonging to the respective partition. Public market data information from T7 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 by a matching engine 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 T7 EOBI snapshot channel.

All standard quotes 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.

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.

Participants 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: 90.152.253.197 becomes unavailable
- 15:15 CEST: Restart of FIX Gateway
IP address: 90.152.253.197 available again
- 15:30 CEST: Application Failover FIX Gateway
IP address: 90.153.253.198 becomes unavailable
- 15:45 CEST: Restart of FIX Gateway
IP address: 90.153.253.198 available again

These tests are recommended for all T7 participants (Members/Vendors) using the T7 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 missing 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 reconciliation with T7 Exchange's 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.

4.1.3 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 pre-production. 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 by DBAG, a crash will be simulated within the partition for market data services. During this 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, all partitions in pre-production will be affected and therefore the test will refer to all products, which are available at that time in the pre-production.

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 standard quotes 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.

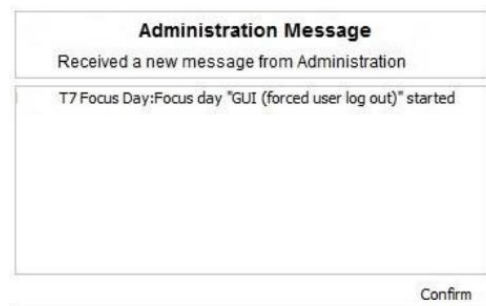
4.1.4 GUI (forced user log out)

The GUI Focus Day scenario is provided primarily to make participants aware of a function within T7 whereby in an emergency/exceptional situation T7 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

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.

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.

Full GUI environment restart

Following a full restart of the GUI environment in pre-production will be performed. On the scheduled focus day, 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.

4.2 Functional Focus Days – Triggered by DBAG

Functional focus days will be offered on several occasions during the pre-production and will be triggered by DBAG. Participants should use this opportunity to test the behaviour of new and older functional features.

4.2.1 Instrument Knock-Outs

On the focus day 'Instrument Knock-Outs' a dedicated set of Instruments will be knocked out by the exchange between 10 a.m. (CET) and 11 a.m. (CET) and between 3 p.m. (CET) and 4 p.m.(CET). When a certain value or rather knockout level of an underlying of a knock-out capable instrument is reached or crossed, the instrument is knocked out. Twice a day, DBAG will process all knock-out events in the Pre-Production environment and therefore catch up and align with the actual Börse Frankfurt environment.

4.2.2 Order Deletion

Prior to the launch of Börse Frankfurt on the T7 trading architecture, on 6 March 2020, existing orders in Börse Frankfurt production trading system that would have been valid on 9 March 2020, will be deleted.

In the end of day processing on the focus day "Order Deletion", all open orders in the following instruments will be deleted in the existing Börse Frankfurt simulation environment and can be re-entered by participants in the Börse Frankfurt T7 pre-production. These deletions will have the time stamp 23:59:58 and can be identified as following:

- FIX Execution Report - ExecRestatementReason 6 (Cancel on Trading Halt)
- ETS Trade Notifications – TrnReasonCode "SUS" + trnTim 23:59:58.99
- TC540 Daily Order Maintenance - rsnOrdrDel is „SUS“ + trnTim 23:59:58
- VALUES Trade Confirmation - trnTim 23:59:58.99

Instruments:

DE0001142693
DE0001102408
DE0001104743
XS0205545840
XS0553728709
SE0002829192
AU000000AUZ8
CA25260V1031
USY384721251
AT00000VIE62
DE0007018509

DE000A1E8G88
 AU0000XCLWV6
 DE000A1Z3XR4
 DE000A0MS7D8
 DE0005152375
 DE000DZ42N68
 DE000DGE1WG2
 DE000TR18QN0
 DE000VF1D5N7
 XS2028085731
 DE000HVB3LY4
 DE000GT6SC28
 XS2029617979
 DE000SG06BX1
 DE000CU42B50
 DE000CP51988
 AT0000A22PL4
 DE000VL3TBC7
 DE000VA5MY28
 DE000HY3X0E1

4.2.3 Quote Request Driven Trading

On the focus days “Quote Request Driven Trading”, participants are requested to enter quote requests which will in turn be answered by the Specialist with a dedicated quote. The quote will then be tradable for the sender of the quote request. If a participant enters a quote request for a particular instrument and quantity with QuotelD field empty, the existing processing is started and Specialist’s standard quote is expected. But if a participant fills in his QuotelD, Specialist’s response is expected. When the quote request is answered by the Specialist, it is distributed only to the quote-requesting session via private broadcast. Participants may answer this Specialists response by entering an order with the QuotelD. This order entered by the participant is forwarded to the Specialist who should enter a matching quote leading to a full execution of the QuotelD order. In case the matching quote does not guarantee a full execution of the QuotelD order, the Specialist Quote gets rejected and no matching will take place. Please Note: If the QuotelD order is not executed within a defined time interval, it is automatically deleted by the trading system, regardless of the current instrument state.

On the Focus Day “Quote Request Driven Trading” participants are requested to test the functionality by entering quote requests in following instruments:

Specialist BALFR: XS1206541366, AT0000758305, DE000CP3S5F3, LU0028119013

Specialist UHEFR: DE0001135481, AU3CB0223519

Specialist ICFFR: DE0001134922, AT0000BAWAG2, DE0008471301, DE000VL3TBC7

Specialist MWBMU: DE0005070908, DE000DL19SH3

Specialist RELFR: AT000B049788, SE0004517290

Specialist SPAFR: DE0005196232, DE000A0GNPZ3

Specialist SEYFR: DE0005221303, DE000A19S4V6

Specialist WSTFR: DE0006614035, DE000A1KRJU8

Specialist BFVBL: AT0000000STR1, DE000A0SMU79

Specialist WALFR: AU3CB0246676, DE000A14KJF5

4.2.4 Corporate Actions

Pre-Production Business Day 1:

DBAG maintains the Cum-Indicator, Ex date and the dividend amount of the instruments.

Pre-Production Business Day 2:

The Cum-Indicator is set and visible for participants. The participants should now have open orders in POSTR. These orders will be deleted during the following batch run. Furthermore, the deletion messages including the order deletion reasons will be sent.

Pre-Production Business Day 3 (Ex-day):

The participants see the Ex indicator and the reference price is reduced accordingly by the dividend amount.

Instruments used:

DE0005936124

DE000A2AAA75

The exact dates and products of the Corporate Actions scenario are displayed in the current pre-production calendar available on Exchange's website.

4.2.5 Special Auction (*On Request Only*)

To support participants during their testing of the trading restriction "Special Auction (SA)", DBAG will initiate the special auction for the following instruments on request:

DE0001142693

DE0001102408

DE0001104743

XS0205545840

XS0553728709

SE0002829192

AU0000000AUZ8

CA25260V1031

USY384721251

AT00000VIE62
DE0007018509
DE000A1E8G88
AU0000XCLWV6
DE000A1Z3XR4
DE000A0MS7D8
DE0005152375
DE000DZ42N68
DE000DGE1WG2
DE000TR18QNO
DE000VF1D5N7
XS2028085731
DE000HVB3LY4
DE000GT6SC28
XS2029617979
DE000SG06BX1
DE000CU42B50
DE000CP51988
AT0000A22PL4
DE000VL3TBC7
DE000VA5MY28
DE000HY3X0E1
DE000PZ8BEX6

4.2.6 Market Halt (On Request Only)

As a possibility to reflect a market halt in T7, DBAG offers to schedule the simulation of the market halt scenario on request.

Test scenario and expected result:

Prior to the planned Market Halt participants are recommended to enter orders and quotes in any products in the affected market. As a result of the market halt, products will not be tradable between the given times. In this scenario all standard quotes will be deleted after the market reset and Specialists must re-enter those quotes. Orders will stay in the system.

4.2.7 Trading Halt on Product level (*On Request Only*)

As a possibility to reflect a product halt in T7, DBAG offers to schedule the simulation of the product halt scenario on request.

Test scenario and expected result:

Prior to the planned Product Halt participants are recommended to enter orders and quotes in the affected products. With the transition of the trading phase to HALT, this product will not be tradable between the given times in T7. In this scenario, all standard quotes will be deleted after the market reset and specialists must re-enter them. Orders for the affected product will stay in the system.

4.2.8 Instrument Stop (*On Request Only*)

As a possibility to reflect an instrument stop in T7, DBAG offers to schedule the simulation of the Instrument Stop scenario on request.

Test scenario and expected result:

Prior to the planned Instrument Stop, participants are recommended to enter orders and quotes in the affected products. With the transition of the trading phase to STOP, this instrument will not be tradable between the given times in T7. In this scenario, all standard quotes will be deleted after the market reset and Specialists must re-enter them. Orders for the affected product will stay in the system.

4.2.9 Instrument Suspend (*On request Only*)

As a possibility to reflect an Instrument Suspend in T7, DBAG offers the simulation of the following focus day on request.

DBAG will suspend single instruments and if requested also all instruments, which share the suspended instruments as underlying.

Test scenario and expected result:

Prior to the planned Instrument Suspend participants are recommended to enter 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 and all quotes will be deleted after the market reset and participants must re-enter them.

4.2.10 Trade Reversals (*On request Only*)

As a possibility to reflect trade reversals in T7, DBAG offers the simulation of trade reversals on request. Participants can contact DBAG, name the trade side (buy or sell), ISIN or short code, MemberID and TraderID and the time of trade and have the trade reversed.

4.3 Recommended Test Scenarios

4.3.1 Locked Stock

Locked Stock refers to the condition when the order book is frozen by the Specialist for a price determination. During Freeze, all order transactions that can impact the potential execution price/quantity, will be kept "Pending" in Locked Stock. After unfreeze, the processing of these order transactions will be performed (if applicable). As the T7 approach for Locked Stock differs slightly from the current Börse Frankfurt system, participants are recommended to test the functionality intensively during pre-production.

All relevant scenarios, which can occur in connection with order add, modify, and delete messages on Locked Stock, as well as basic information about order notifications created per action before, during and after Freeze, are listed in the document 'Functional Reference' (chapter 3.2.5.1, available on the following path:

Xetra.com > Technology > System documentation > Release 8.0 > Overview and Functionality

4.3.2 Non-CCP trading

With T7 Release 8.0, it will be possible to perform CCP and non-CCP trading in one market. Each instrument is flagged by the exchange whether it is CCP eligible or not. The information is available in the reference data interface (T7 Xetra, T7 Börse Frankfurt) and in the Reference Data File (T7 Xetra, T7 Börse Frankfurt) and in the All Tradeable Instruments File (T7 Xetra, T7 Börse Frankfurt).

It is highly recommended to test in non-CCP instruments during pre-production.

5. Refresh Week & Production Rollout

The launch of Börse Frankfurt under T7 8.0 will be effective on 9 March 2020.

5.1 Refresh Week

The approach for the CWs 9 and 10, 2020 in the pre-production environment will be as follows:

2020 - Week 9	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Calendar day	24 Feb	25 Feb	26 Feb	27 Feb	28 Feb	29 Feb	01 Mar
Online time (CET)	0:00 - 24:00	0:00 - 16:00	10:00 - 16:00	10:00 - 16:00	10:00 - 24:00	-	-
Event	-	-	-	Surrounding Simulation Interfaces will be decoupled post-batch.	-	-	-
Trading / Testing	Yes	Yes	Yes	Last day in Pre-Production, for testing incl. surrounding simulation systems.	Yes (standalone)	-	-
Batch day	No	Yes	Yes	Yes	Yes	-	-
Business day	25 Feb 2020	25 Feb 2020	26 Feb 2020	27 Feb 2020	28 Feb 2020	-	-

2020 - Week 10	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Calendar day	02 Mar	03 Mar	04 Mar	05 Mar	06 Mar	07 Mar	08 Mar
Online time (CET)	-	10:00 - 22:00	10:00 - 22:00	10:00 - 22:00	10:00 - 22:00	-	-
Event	Closed for members	System will be in Holiday Status	System will be in Holiday Status	System will be in Holiday Status	System will be in Holiday Status	-	-
Trading / Testing	-	No (Only check of setup & user maintenance)	No (Only check of setup & user maintenance)	No (Only check of setup & user maintenance)	No (Only check of setup & user maintenance)	-	-
Batch day	Yes	Yes	Yes	Yes	Yes	-	-
Business day	02 Mar 2020	03 Mar 2020	04 Mar 2020	05 Mar 2020	06 Mar 2020	-	-

After the end-of-day processing on Thursday, 27 February 2020, all DBAG participating simulation systems (e.g. Central Counter Party for settlement services and Xentric Quote Source) will be decoupled from the pre-production environment.

On 2 March 2020, the system will be closed for members.

From 3 March to 6 March, 2020 the system will be in holiday status. During this period, all instrument suspensions, knockouts, corporate actions and reference data updates in T7 Börse Frankfurt are executed in parallel with the existing Börse Frankfurt production system.

On March 2, an additional cleanup of participant and user data will take place based on existing Börse Frankfurt production trading system data of 21 February 2020.

This entails:

- BU and User deletion of
 - Simulation only member and associated user
 - Vendors and Service Provider and associated user
 - User not setup in the current Börse Frankfurt trading production system
- User data will be refreshed. Please note that existing **T7 User names, technical ids and passwords will not be changed within this additional user and member reference data update.**
- New BU setup in Börse Frankfurt trading production that are neither Vendors nor Service Providers will be setup in T7 Börse Frankfurt in case they were not part of the pre-production setup
- Refresh of the Trading BU Entitlement

The following roles on BusinessUnit level will be aligned according to the RAL setup in the current Börse Frankfurt trading production system

- CASH TRADER
- TES TRADER
- TES BROKER
- CASH SPECIALIST

5.2 Participant Tasks before Production Launch

After the refresh activities, as of 3 March, 2020 participants should check and verify their participant and user setup in order to allow for a smooth production launch on 09 March, 2020:

- Verify business unit data after refresh as of 3 March, 2020
 - o Roles
 - o Settlement Currency Assignment
 - o Settlement Accounts including SI account assignment
 - o Bilateral Aggregation and Settlement Internalisation Settings
- Verify user data after refresh as of 3 March, 2020 Ensure password changes of all user prior to production start
- (Re)Request bilateral aggregation account selection

5.3 Production Rollout Timeline

Please find the T7 8.0 Production Milestones below:

Date	T7 8.0 Production Milestone
2 March 2020	Cleanup of participant and user data based on Börse Frankfurt trading production system data of February 21st, 2020
6 March 2020	Existing orders in Börse Frankfurt production trading system that would have been valid on March 9th, 2020, will be deleted.
9 March 2020	T7 Release 8.0 Börse Frankfurt production launch

6. Communication & Support

6.1 Contacts and support hours

The standard support times of the Exchange will be in effect during the pre-production phase. The helpdesk departments and further information sources are provided in the following section.

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

6.1.1 Key Account Managers and Global KAMs

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 pre-production and production
- Participant data changes for pre-production and production
- ISV related queries

6.1.2 Functional Helpdesk Börse Frankfurt

Phone: +49-69-211-1 10 50 (09:00 – 20:00 CET)

- Functional trading related issues
- Functional focus days
- Product data management
- Market Control
- Pre-Production 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 Technical Key Account Management

Phone: individual VIP number (Monday 01:00 CET – Friday 22:00 CET business days)

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

6.2 Further sources of information

Changes and further information regarding the T7 pre-production will be provided via the following channels:

- Circulars
- Readiness Newsflashes
- Implementation News on the Xetra website for T7 under following path:
www.xetra.com -> Technology -> Implementation News