Emergency Playbook

Incident Handling

Standards and Best Practices
Defined by Eurex and Frankfurter
Wertpapierbörse

Version 3.0

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play

21 August 2023

Page 1

Table of Contents

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play

21 August 2023

Page 2

1 List of Abbreviations

The table below shows all the abbreviations and definitions used in this document.

CE	Core Element
DBG	Deutsche Börse Group
DORA	Digital Operational Resilience Act
EOBI	Enhanced Order Book Interface
ETI	Enhanced Transaction Interface
FIX	Financial Information eXchange. The Financial Information eXchange ("FIX") Protocol is a series of messaging specifications for the electronic communication of trade-related messages.
FWB	Frankfurter Wertpapierbörse
GUI	Graphical User Interface
GW	Gateway
HF	High Frequency
LF	Low Frequency
MIC	Market Identifier Code
MiFID II	Markets in Financial Instruments Directive (2004/39/EC)
PS	Partition Specific
TES	T7 Entry Service
XEUR	Operating MIC Code of Eurex

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
örse_Emergency_Play
21 August 2023

Page 3

2   Introduction

This document provides trading participants a concise overview on the handling of a technical incident at Eurex or Frankfurter Wertpapierbörse (FWB), including the guidelines of the incident communication to the market, as well as the internal operational procedures that are activated in the event of a technical incident.

The derivatives and cash market exchanges Eurex and FWB of Deutsche Börse Group (DBG), utilize stable and resilient systems and aim to minimize disruption and uncertainty for their trading participants. This is also reflected by the high average availability rates of 99.97% for Eurex and 99.98% for FWB over the last 20 years. As part of their mission, Eurex/FWB continuously improve their technology and procedures with the goal to offer a robust infrastructure and, if necessary, the best incident handling possible. Trading participants have access to transparent and thoroughly defined processes in case of a technical incident on FWB or Eurex. MiFID II and in particular Articles 47 and 48 establish the framework defining requirements for trading venues to ensure systems resilience and orderly trading. FWB and Eurex thereby adhere to and go beyond those requirements to ensure high availability of their trading systems. The exchanges continuously strive for a highly resilient T7 Trading System and continuously work on improving business continuity measures to get close to a 100% availability and to keep chances of a technical incident rare. Consequently, such incidents are unlikely, but remain plausible events that require preparation. In case a technical incident does occur, Eurex/FWB have established clear standards and continuously review and improve their incident communication and handling to minimize the impact and swiftly resolve the issue. By publicly communicating the standards described in this document, Eurex/FWB aim to increase clarity and predictability for their trading participants regarding the operational procedures that are in place.

This playbook describes the incident communication and operational procedures at Eurex/FWB including the most recent improvements based on trading participants' feedback:

- Firstly, Eurex/FWB have established a swift and transparent incident communication towards the market, which is done by way of publication of standardized and clear announcements in English and German via multiple communication channels with regular updates. Alongside trading participant communication, Eurex/FWB also ensure efficient incident notification to the competent authority without any delay. The provision of the respective information to the responsible competent authority is based on well-established procedures and in accordance with the legal notification obligations as per Art. 54.2 MiFID II.
- Secondly, Eurex/FWB have standardized operational procedures in case of a technical incident to ensure orderly trading, which includes decisions on market halts or trade cancellations. Eurex/FWB also provide pre-defined opening procedures after a technical incident, have developed and continuously improve backup plans for the daily and final settlement price determination routines for derivatives and aim to establish alternative cash market closing price determination procedures (closing auctions).

This playbook is Eurex and FWB's contribution to a broader industry discussion on best practices and common standards. Eurex/FWB are committed to providing the best possible service and as such, are always open to improvements and adapting their policies and procedures in line with technological progress.

3   Incident Prevention: Trading System Resilience

The design of the T7 trading system for Eurex and FWB is based on state-of-the-art technology and a robust and resilient architecture which is continuously improved from the lessons learned. This allows for better handling of system issues and does in the best cases avoid any adverse effects to trading at all.

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play

21 August 2023

Page 4

The core features of the trading system resilience were designed to ensure data integrity and maximum availability, resulting in four lines of defense that are built to reduce the likelihood of technical incidents considerably. The four lines of defense aim to create a robust framework that anticipates potential failures and pro-actively addresses them through system design.

3.1 1st Line of Defense: Redundancy of Core Elements

The core elements (CE) of the T7 trading system (e.g. the matching engine, logging, T7 Entry Service) are duplicated and run in a hot-hot-mode, so that a failover can be processed automatically. Such a hot-hot mode means that in case of a failure in the active core element, the backup will immediately take over without any delay as it knows the current work status. There is no action required by participants and information of the failover will be published automatically. This is depicted in Figure 1 below which includes some of the most important components of the T7 trading system. Failovers of the matcher might still result in the need to re-login into the T7 trading system and to re-enter non-persistent orders (see also chapter 4.4 on Trading Participants Best Practice for Order and Trade Reconciliation).
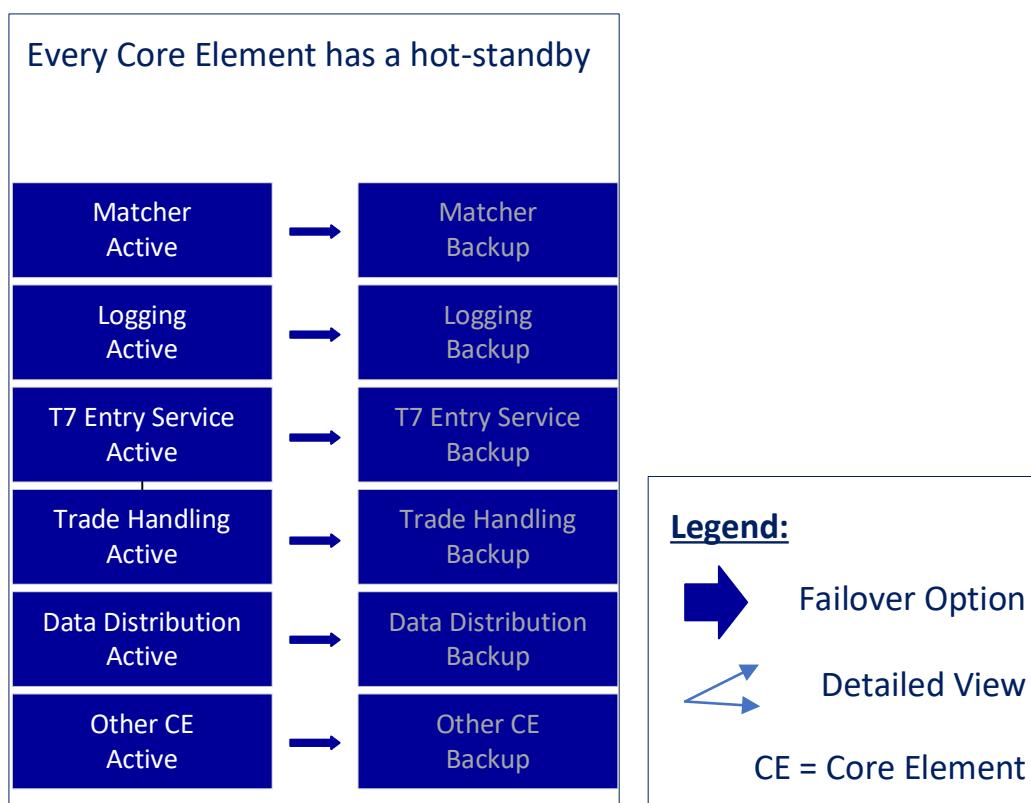

Fig. 1: Redundancy of Core Elements and failover mechanism

3.2 2nd Line of Defense: Physical Separation

The afore-mentioned core elements are set up on two different pieces of hardware. These are located in different rooms in the data center in order to prevent physical failures or damages that would affect the leading core

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B

örse_Emergency_Play

21 August 2023

Page 5

elements and the backups at the same time. This is shown in Figure 2 which also outlines the interconnection between the two locations. The elements with a white background are the active core elements, whereas the backup elements are displayed with a grey background. The active element of partition 2 is located in Room A and the backup element of the same partition is located in Room B. In case room A becomes unavailable due to a physical failure (e.g. power issue or a fire), the core element in Room B could take over, because it would be unaffected by any physical failures that impacted Room A. Participants do have an established connectivity to both rooms, hence they will be able to continue their activity in such a scenario and are able to access the backup in the opposite Room.
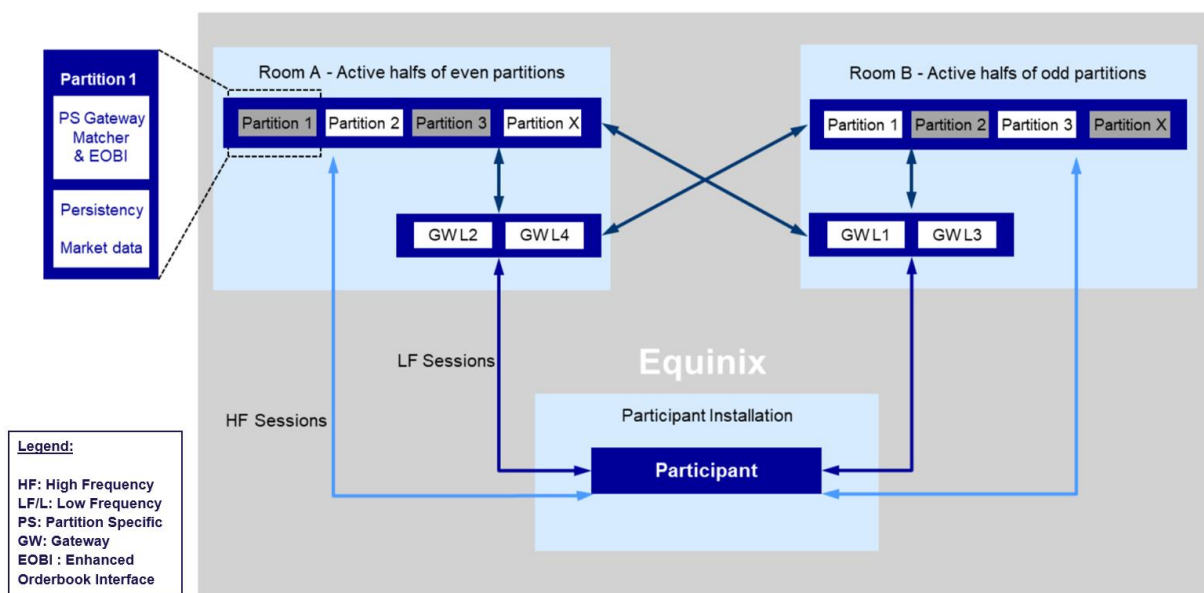

Fig. 2: Physical Separation

Figure 2 is a schematic overview of the T7 trading system architecture from the perspective of trading participants connecting via ETI Low Frequency and High Frequency sessions.

3.3   3rd Line of Defense: Localization of Issues

The trading system is clustered into partitions each holding a set of products. The partitions work independently from each other on own hardware, which prevents spillover effects.

Each partition hosts its own instances of the core elements. Restorations, failovers and restarts can be run without effects on the products or instruments on other partitions. This is displayed in Figure 3.
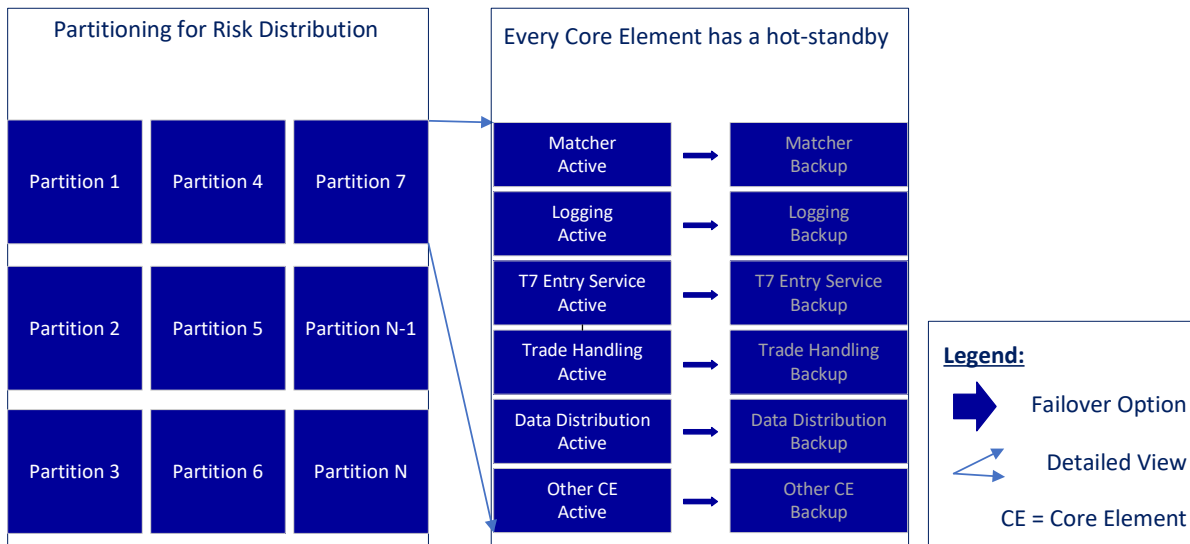
Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play

21 August 2023

Page 6

Partitioning for Risk Distribution			Every Core Element has a hot-standby	
Partition 1	Partition 4	Partition 7	Matcher Active ➡	Matcher Backup
Partition 2	Partition 5	Partition N-1	Logging Active ➡	Logging Backup
Partition 3	Partition 6	Partition N	T7 Entry Service Active ➡	T7 Entry Service Backup

Legend:

➡ Failover Option

⟨ Detailed View

CE = Core Element

Fig. 3: Localization of Issues via equally setup partitions

3.4   4th Line of Defense: Separate Disaster Recovery System

The mechanisms and their benefits described as 1st and 3rd lines of defense are furthermore present in a second T7 disaster recovery system. The disaster recovery environment is duplicated on a separate hardware in a different data center and would be used if the recovery of the standard environment is unlikely or if the data center containing Room A and B would not be available at all. It offers in fact a 3rd and 4th matcher per partition that can be activated to offer continuous matching.

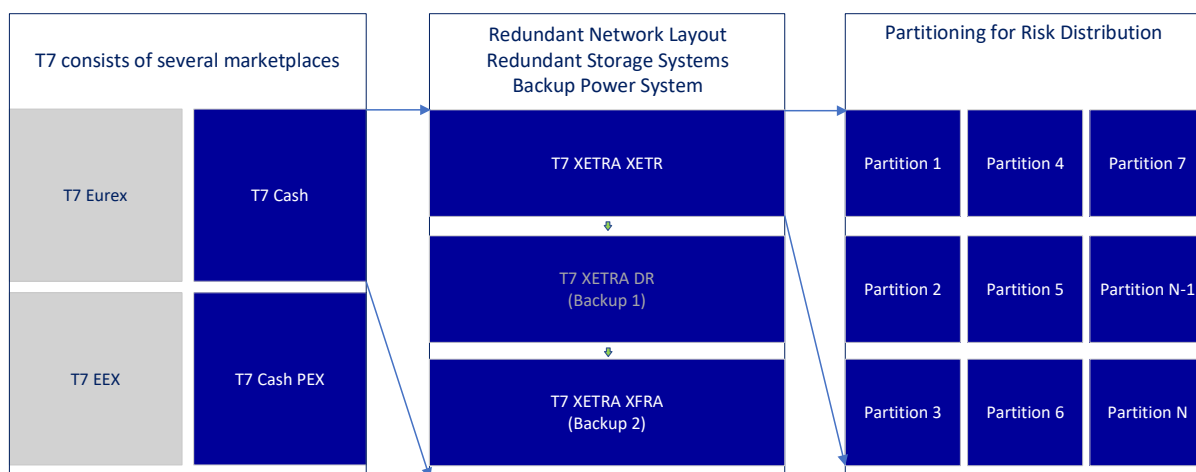| T7 consists of several marketplaces		Redundant Network Layout Redundant Storage Systems Backup Power System	Partitioning for Risk Distribution		
T7 Eurex	T7 Cash	T7 XETRA XETR	Partition 1	Partition 4	Partition 7
		T7 XETRA DR (Backup 1)	Partition 2	Partition 5	Partition N-1
T7 EEX	T7 Cash PEX	T7 XETRA XFRA (Backup 2)	Partition 3	Partition 6	Partition N

Fig. 4: Separate Disaster Recovery System

Stocks listed on XETRA are listed also on Börse Frankfurt as well and therefore offer trading opportunities during the recovery-times of the Xetra System.

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
örse_Emergency_Play

21 August 2023

Page 7

4   Incident Handling

Even though the likelihood of technical incidents is reduced by the resilient trading system architecture, Eurex/FWB are always prepared to react swiftly and efficiently in case of a technical emergency. Upon internal detection of a technical emergency, pre-established procedures are activated to facilitate a timely resolution of the issue. The procedures are in line with the industry-wide standard ten principles of FESE outages protocols published in 2022, as well as will be tested and updated regularly with each T7 delivery.

Cash/Derivatives Trading Operations immediately communicate with Trading IT to align on the current status of the system. If not started already, an immediate root cause investigation and resolution (e.g. restart or fix preparation) is initiated. Simultaneously, an initial notification is distributed to the trading participants stating that the exchange is experiencing issues. During the root cause investigation and issue resolution by Trading IT, Cash/Derivatives Trading Operations will regularly publish updates to keep trading participants informed. As soon as the issue has been resolved (e.g. a fix has been installed) and the systems are available for trading again, trading participants will be informed. In case the technical incident has caused a halt of trading (for specific products), a trading resumption schedule will be prepared and published as notification to the trading participants. This process is depicted in figure 5 below.
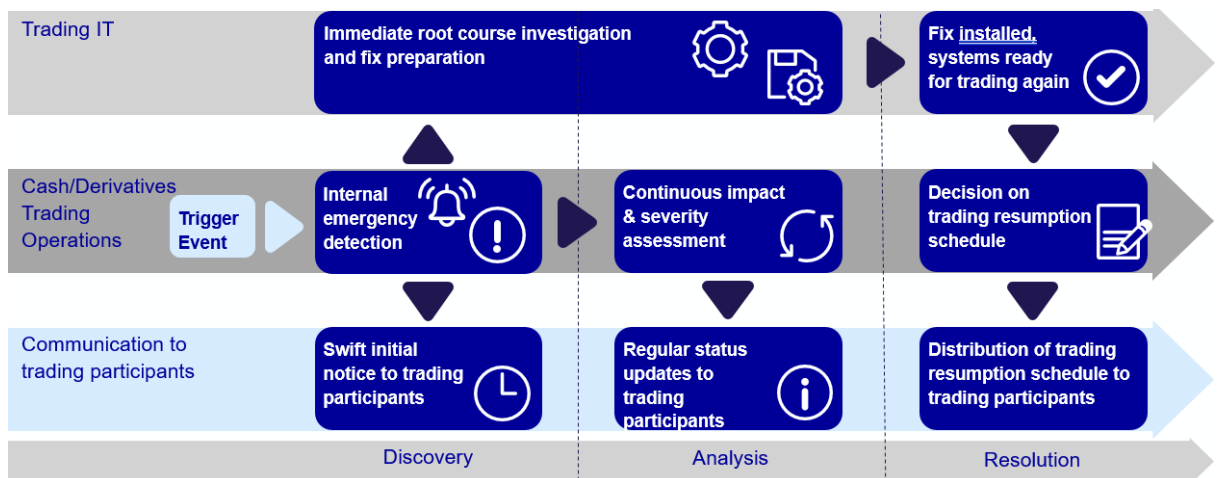

Fig. 5: Phases of an Emergency

4.1   Link between derivatives trading and outage on equity primary market

There is no explicit link between trading a derivative and the availability of its underlying. Market participants would retain the choice of trading the derivative instruments should an outage impact the underlying instruments. On Eurex derivatives market, trading on derivative instruments would continue if it is technically possible and when the situation is in compliance with the Eurex rulebook, independently from the availability of the underlying.

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
oerse_Emergency_Play

21 August 2023

Page 8

4.2 Incident Communication

One key element that facilitates quick handling of technical emergencies is clear, fast and reliable communication to the trading participants. Therefore, the DBG exchanges (Eurex/FWB) have joined their forces and streamlined their incident communication and incident handling procedures.

4.2.1 External Communication

If the T7 trading system becomes (partially) unavailable (caused e.g. by a technical issue), Eurex/FWB aim to provide the trading participants with a swift and precise initial notification and regular status updates until the issue is fully resolved. The different emergency communication types are:

I. Automatically generated emergency information messages by the T7 trading system
II. Initial emergency message
III. Regular updates until resolution
IV. Trading resumption/final resolution message

The following paragraphs give more details on the different types.

I. Automatically generated emergency information messages by the T7 trading system
The trading system is designed to recognize certain specific issues (e.g. gateway failure or a matching engine failover). The automated reaction of the T7 trading system provides an immediate notification of a potential technical issue. The automated messages are posted on the T7 GUI News Board as well as the Production News Board on the webpage and distributed via the Enhanced Trading Interface (ETI) or market data interfaces. (See reference: Incident Handling)

II. Initial emergency message

After the occurrence of a technical issue, FWB and/or Eurex assign(s) all necessary resources to investigate the situation. Trading participants are informed as soon as possible and resolution measures begin. The exchange informs trading participants about the issue on the T7 GUI News Board (if T7 is available), via e-mail, via SMS message and the Production News Board on the website. FWB/Eurex have recently begun to make use of an additional communication channel via the data provider "Bloomberg". Using the dedicated "Financial Markets" news source, FWB/Eurex now publish emergency notifications straight to the "Bloomberg" news platform. In other terms, emergency-related messages, which are published over the Emergency News Board on www.eurex.com should also be visible on the Eurex financial markets news source on "Bloomberg" (details available in the Emergency Refresher Newsflashes published by FWB and Eurex on 12. April 2022).

The emergency messages distributed via these channels are based on pre-defined templates for different emergency scenarios. This allows swift and consistent communication. All messages contain the same information in English language, followed by a German version. In addition, the Market Status in the lower right corner of the FWB and/or Eurex website(s) classify(ies) the issue according to a "traffic light" indicator that displays the severity of the emergency in an intuitive manner (green, orange or red). It also includes a link to the respective most recent emergency News Board messages on the websites of Eurex/FWB. Eurex/FWB are currently exploring additional information channels (e.g. via social media) that could be used in special cases to maximize reach to the market.

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
oerse_Emergency_Play

21 August 2023

Page 9

Even though Eurex/FWB strive to promptly inform all stakeholders, they, however, cannot guarantee simultaneous (timely) delivery in each individual case for all channels. Due to dependencies on third-party providers, this is especially the case with SMS, messages might be received later than others.

III. Regular updates until resolution

Trading participants shall receive regular updates from the respective impacted exchange to ensure full transparency of the status of an incident. Thus, participants can expect an update at regular intervals after the initial emergency message and until final resolution of the issue (via the same channels detailed in point II above). The maximum interval is 30 minutes. These messages can include information that the issue is still under investigation or new information, if additional relevant implications have been identified. If relevant information is available at an earlier point in time, it will be communicated immediately.

IV. Trading resumption/final resolution message

In case the technical issue is resolved, the exchange distributes a message on the details of the trading resumption (if applicable) or a resolution message. Again, the same channels as mentioned in point II above are used.

Trading participants can subscribe to emergency notifications in the Member Section of Deutsche Börse Group. Participants can choose to receive notifications via e-mail and/or SMS for the services Eurex, Eurex Clearing and Xetra. For more detailed information, please refer to the User Guide of the Member Section of Deutsche Börse Group, pages 20 and 21.

4.2.2   Internal Communication

In 2020, Eurex/FWB have reviewed and further optimized their internal information distribution process to optimize and enable customer facing teams during incidents even better, thus increasing service quality to trading participants.

Eurex/FWB established an immediate internal escalation and emergency communication procedure, which steers the information flow between all relevant internal parties including the Executive Board, the functional and technical operations teams involved in the analysis of the technical incident and its resolution. With this approach, the emergency information is structured and distributed in a consolidated manner to the whole DBG organization, especially providing swift and regular information to other internal interfaces which support trading participants, e.g. technical and functional key account managers, sales and other relevant teams. This also includes a direct feedback loop to the teams that try to resolve the technical incident with additional relevant input to include consolidated customer inquiries and customer status. This information can be helpful and will be considered for assessment of the situation and decision-making purposes. This process is depicted in Figure 6.
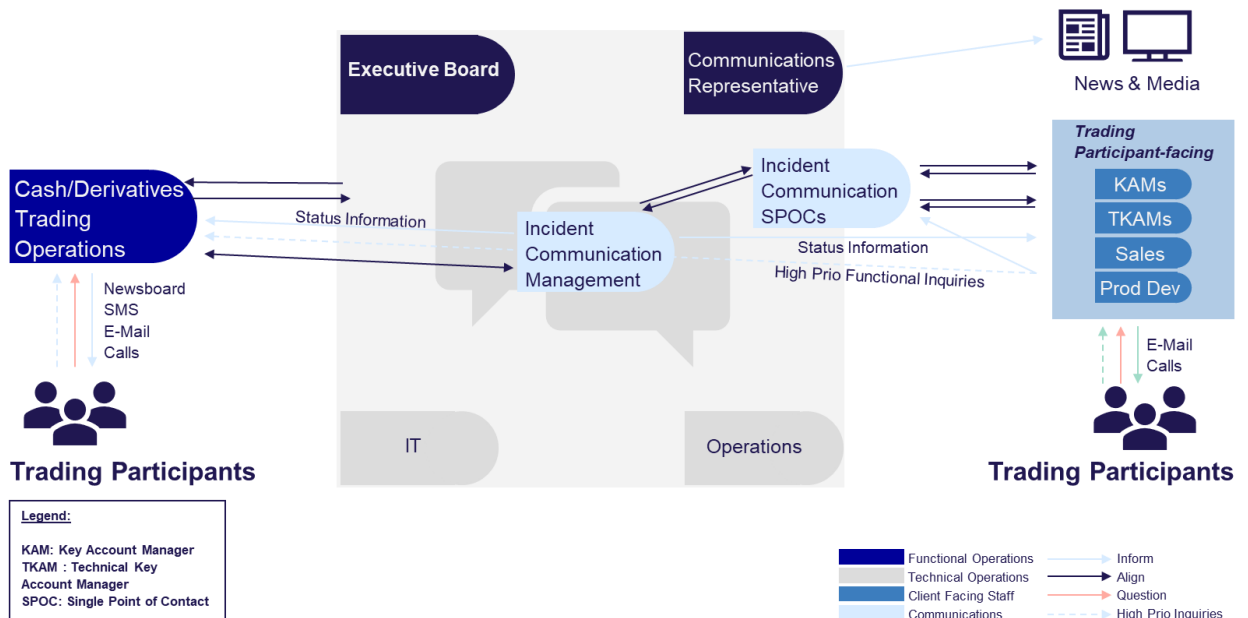
Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
örse_Emergency_Play

21 August 2023

Page 10

Fig. 6: Internal Communication Model

4.3   Market Re-Opening Procedures

If the experienced issues have been resolved Eurex/FWB strive to make the trading system available again for trading participants as quickly as possible. This also includes the respective preparations for re-opening.

There are pre-defined re-opening schedules depending on the magnitude/length of the technical incident. The market re-opens with standardized pre-trading and auction phases. This is communicated before the market is opened and follows a strict and predictable procedure.

Pre-defined Opening Schedules

As soon as the trading systems have been re-stored and re-started, Eurex/FWB will inform participants accordingly. The products will be switched to pre-trading first and in nearly all cases keep at least 30 minutes notice period. Eurex/FWB will publish a dedicated opening schedule, which will include information on the respective times for the various instrument states. In all cases, the German version is the legally binding publication. An example of such a trading resumption schedule message can be found in the following box.

DEUTSCHE BÖRSE GROUP

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play
21 August 2023

Page 11

(MIC:XEUR) The EUREX T7 system is available again / opening schedule.
Start of trading will follow the schedule below
11.00 h CET/CEST Pre Trading Instrument State BOOK
11.25 h CET/CEST Trading Instrument State OPENING AUCTION, with a minimum duration of 5 minutes
11.30 h CET/CEST Trading Instrument State CONTINUOUS
Non-Persistent orders and quotes have been deleted. Please check/synchronize the status of your Persistent-Orders with EUREX T7. Please be reminded that trades have only been executed if you received a trade confirmation. You can see all your trades e.g. in T7 GUI – Own Trades Overview.
Due to manual state changes some products start trading later than others.
Please do not hesitate to contact Market Supervision for any questions you may have.
Market Supervision +49 69 211 11 210

(MIC:XEUR) Das EUREX T7 System steht wieder zur Verfuegung / Eroeffnungsplan
Der Handelsbeginn erfolgt nach folgendem Zeitplan
11.00 Uhr CET/CEST Pre Trading Instrument Status BOOK
11.25 Uhr CET/CEST Trading Instrument Status OPENING AUCTION, die Mindestdauer betraegt 5 Minuten
11.30 Uhr CET/CEST Trading Instrument Status CONTINUOUS
Non-Persistent Orders und Quotes wurden gelöscht. Bitte ueberpruefen/synchronisieren Sie Ihre Persistent-Orders mit EUREX T7. Bitte beachten Sie, dass eine Ausführung nur dann stattgefunden hat, wenn Sie eine Ausführungsbestätigung bekommen haben. Sie können alle Ihre Ausführungen im T7 GUI nachvollziehen. Sie finden sie im Own Trades Overview.
Aufgrund manueller Schaltungen kann es zu Verzoegerungen bei einzelnen Produkten kommen.
Sollten Sie Fragen haben, wenden Sie sich bitte an Market Supervision.
Market Supervision +49 69 211 11 210

Fig. 7: Example of a trading resumption schedule message

Definition and typical length of the Pre-Trading and Trading product phase

Pre-trading: Pre-trading is a phase prior to the auction and continuous trading phase, in which trading participants may maintain their orders but no matching occurs. After a technical incident, incident-affected products are switched to pre-trading. The duration of the pre-trading and opening auction phase is typically approximately 30 minutes long. Depending on the circumstances of the incident, it can be either shorter or longer. The duration of these phases is determined such that it is sufficient to reconcile orders and trades following the orderbook restatement that is distributed to all trading participants as soon as the trading system is technically available again (see chapter 4.5 Trading Participants Best Practice for Order and Trade Reconciliation).

Opening auction and continuous trading phase: At the end of the pre-trading phase, the product state switches to an auction phase. The minimum time frame for an opening auction is typically five minutes, however, it is crucial to provide sufficient time to allow for liquidity to bundle before the product is moved to continuous trading. The minimum duration of the opening auction will always be provided in the publication of the opening schedule. The auction phase allows for market participants to submit/modify or delete orders and optimise the price discovery process by concentrating all trading interests in an organized fashion.

4.4 Monitoring of Fair and Orderly Trading Conditions

It is the mission of Eurex/FWB to ensure fair and orderly trading conditions. Before the auction is concluded and the products are switched to continuous trading, Eurex/FWB carefully monitor market status and activity. This

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
oerse_Emergency_Play
21 August 2023
Page 12

means that Eurex/FWB regularly observe the number of connected trading participants and their respective market share, the general status and type of trading participant connectivity (GUI, ETI, FIX) and the number and quality of incoming trading participant calls. These are all factors to assess market quality and orderly trading conditions.

In case Eurex/FWB identify adverse situations, such as for example incorrect data dissemination during continuous trading, that could lead to unfair and not orderly trading conditions, Eurex/FWB will halt trading. Trading will only be resumed according to the above-described best practices as soon as fair and orderly trading conditions are restored.

Generally, trades stand if the legally binding trade confirmation has been distributed by and is available in the T7 system, after the technical issues are resolved and pre-trading has been reached. In case extraordinary emergency related circumstances have resulted in non-orderly trading conditions under which orders have been executed, Eurex/FWB will announce and execute the reversal of the resulting trades. If Eurex/FWB become aware of such a scenario during an incident, Eurex/FWB will aim to communicate the reversal of these trades before the market re-opening.

The handling of mistrade is not affected by the emergency processing.

4.5 Trading Participants Best Practice for Order and Trade Reconciliation

In order to prepare their trading participants for potential technical incidents, Eurex/FWB will publish information on best practices regularly. This documentation can be used by trading participants to prepare before a technical incident occurs or investigate details during a technical emergency. More information can be found in the T7 Incident Handling Guide. Furthermore, emergency refresher newsflashes are published regularly and provide general incident handling information or describe the technical incident handling of different technical incident cases.

Market Reset

The appropriate handling of market reset situations is particularly important. A market reset event is triggered if the secondary/backup matching engine takes over the lead role from the primary matching engine (see also figure 1 describing the redundancy of core components). This can be caused by failures of the primary matching engine itself or other central T7 components.

During a market reset, all non-persistent orders and quotes on the affected partition are automatically deleted. The secondary component will take over by loading the persistent orders from the persistency layer. There will be no individual deletion notifications about the loss of non-persistent orders or quotes because those are unknown to the previously secondary matching engine.

Order and trade confirmations

Beyond the loss of non-persistent orders and quotes, preliminary order responses and broadcasts (e.g. execution/addition/modification/deletion) sent out to the trading participant might not have been persisted. In this way, orders that have not reached the persistency layer will not be taken into consideration after a market reset. Due to the preliminary nature of all responses (including preliminary execution reports) sent by the matching engine, it is crucial to synchronize the status of all persistent orders with the order book restatement. Order book restatement messages (and the trading session event messages mentioned above) are recoverable.

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
örse_Emergency_Play
21 August 2023
Page 13

Moreover, if there is no legally binding trade notification (ETI)/trade capture report (FIX) for a given execution report after the trading system is available again, the execution report must be considered invalid and needs to be discarded.

The expected sequence of events in this context unwinds as follows:

- A market reset event is signaled to participants through the ETI interface on a partition level using the trading session event message;

- Non-persistent orders and quotes have been automatically deleted;

- Through the market reset event, the trading services are re-enabled. The individual products on the affected partition might switch to the halt state;

- After switching to pre-trading phase, all active persistent orders of a session are available to the trading participant via the respective session;

- Finally, a trading session event message is sent indicating the end of the restatement per product.

More details about order book restatement can be found in the Enhanced Trading Interface (ETI) Manual, section "4.7.11 order book restatement" and in the T7 FIX Gateway Manual, section "3.8.11 order book restatement". For additional information, please refer to the documents listed in *Further Reading.*

4.6 Backup Procedure for Reference Price and Settlement Price Determination

For the scenario of a technical incident during the price determination time at Eurex/FWB or on other relevant venues, Eurex has implemented rule-based procedures to determine prices in case of unavailability of the primary source. These procedures facilitate a back-up solution to ensure the orderly functioning of markets.

4.6.1 Daily Settlement Price Determination (Eurex)

The daily settlement prices of Eurex derivative contracts are determined according to the detailed waterfall procedure as specified in the Clearing Conditions of Eurex Clearing AG. The waterfall process has been aligned with the market and allows a transparent and predictable process.

The exact daily settlement price methodology for futures contracts may differ per asset class and is based on trades, bid-offer prices on Eurex, underlying index and security values, prices from other venues or theoretical pricing models. Additionally, for specific, more exotic asset classes such as variance futures, total return futures and market on close futures, a special market disruption event procedure is in place to determine the daily settlement price.

For option contracts the daily settlement prices are determined through option pricing models taking into account dividend expectations, interest rates, volatility and the underlying reference price. The underlying reference price used in the calculation of daily settlement prices for options is the home exchange underlying closing price, index closing price or corresponding daily settlement price of futures contract. In case the primary underlying market becomes unavailable during the day, the closing price or closing index value as defined by the home market or index provider is intended to be used. Otherwise, the last available price or value of the underlying from the home market or index provider can be used. In case the home market or index provider is

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
örse_Emergency_Play

21 August 2023

Page 14

unable to provide a reliable price indication for specific trading day, Eurex might consider taking underlying reference prices from alternative trading venues.

4.6.2 Final Settlement Price Determination (Eurex)

The determination of the final settlement price does not rely on such a variety of different sources, as the final settlement price is only relevant at the expiry of the contract. The determination of the final settlement price is also defined in the Clearing Conditions, where as a fallback in case of non-availability of the price, Eurex Clearing AG may determine the final settlement price at its reasonable discretion.

To provide additional predictability and as a lesson learned from the Covid crisis in 2020, fallback procedures are developed and discussed with trading participants. For Eurex products, which are settled either based on underlying reference prices of trading venues other than Eurex or reference prices of index providers, Eurex Equity & Index Product Design units have developed a market disruption model. This model describes potential alternative solutions for the determination of final settlement prices in case the primary underlying market or source becomes unavailable. The model was initially presented in 2020 in the regular Eurex working committees and will be further consulted with trading participants. As a first fallback, the model is designed to use prices from the reference market, so long as re-opening of the reference market is possible within Eurex system availability time. As a second fallback, in case the primary reference market is unavailable, prices from alternative marketplaces could be used to define the final settlement price for equity and equity index products on the expiration day. In absence of alternative markets, the final settlement price may be defined via another method such as applying the last available price or implied index levels. Such a method is announced to the market.

4.6.3 Closing Auctions (FWB)

FWB successfully ensured in the past and wants to ensure in the future that a closing price can be determined according to the primary rule and therefore within a closing auction. The dependencies on downstream systems allow a latest determination up to 22:00 CET for the relevant trading session. Nevertheless, some market participants suggest not to use the complete timeframe. FWB therefore strives to complete the closing auction as soon as possible.

Since the introduction of the electronic trading system XETRA in 1997 the closing auction has never been down once. In case the standard environment does not recover early enough, the disaster recovery environment will be used and started in time to allow for the closing auction to be processed.

In both cases, the trading participants will be informed via the dedicated communication channels about the issue and subsequently via regular information about the progress. Finally, the schedule for processing the closing auction will be published. It will include time for checking and maintaining orders within the pre-trading phase followed by the auction phase. Both will amount to at least 30 minutes.

4.7 Post Incident Analysis and Communication

Market and Industry Information

Following a technical incident, Eurex/FWB have in the past already and continue considering it useful to perform a post incident analysis not only internally, but also to explain the sequence of events, share conclusions and

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play
21 August 2023
Page 15

detailed mitigating procedures taken by Eurex/FWB with trading participants. Most importantly, Eurex/FWB are welcome to feedbacks on how the process can be further improved. Therefore, Eurex/FWB intend to engage with the industry via open follow-up calls to discuss and share insights on the events that have transpired. Providing this information broadly would allow participants to obtain the key insights into such incidents. Beyond that, Eurex/FWB will continue to offer bilateral follow-ups on dedicated aspects when specifically requested by the trading participants.

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
oerse_Emergency_Play
21 August 2023
Page 16

5 Contacts

Trading Operations Helpdesk Derivatives

Eurex Frankfurt AG | worldwide

Service times: on trading days from Monday 01:00 until Friday 23:00 CET (no service on Saturday and Sunday).

T +49-69-211-1 12 10

eurextrading@eurex.com

Trading Operations Helpdesk Xetra, Börse Frankfurt

Deutsche Börse AG | worldwide

Service times: on trading days from Monday 07:30 until Friday 22:00 CET (no service on Saturday and Sunday).

T +49-69-211-1 14 00

cmmarketcontrol@deutsche-boerse.com

Customer Technical Support / Technical Helpdesk

Eurex Frankfurt AG | worldwide

Service times: from Monday 01:00 until Friday 22:00 CET (no service on Saturday and Sunday). Please contact your Technical Account Manager via your personal VIP number.

T +49 69 211-VIP / +49 69 211 10 888 (all)

cts@deutsche-boerse.com

Helpdesk Derivatives Clearing

Eurex Clearing AG | worldwide

Service times: from 01:00 CET – 22:30 CET (no service on Saturday and Sunday).

T +49-69-211-1 12 50

clearing@eurex.com

CCP Risk Management / Risk Exposure Management

Eurex Clearing AG | worldwide

Service times: Helpdesk Risk – 01:00 CET – 22:30 CET (no service on Saturday and Sunday).

T +49-69-211-1 24 52

risk@eurex.com

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play

21 August 2023

Page 17

Helpdesk Clearing Data Control

Eurex Clearing AG | worldwide

Service times: 08:00 CET – 20:00 CET (no service on Saturday and Sunday).

T +49-69-211-1 24 53

clearingdata@eurex.com

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play
21 August 2023
Page 18

6   Further Reading

Incident Handling

[T7 Release 11.0 Incident Handling Guide](#)

Market Data and Order Entry

[T7 11.1 Market Data Interfaces: T7 EMDI](#)

[T7 11.1 Market Data Interfaces: T7 EOBI](#)

[T7 11.1 ETI Manual](#)

[T7 11.1 ETI Manual Derivatives Message Reference](#)

[T7 11.1 - Cash Markets Instrument Reference Data Guide](#)

[T7 11.1 Enhanced Trading Interface Message Reference](#)

[T7 11.1 FIX Gateway Manual](#)

Disaster Recovery

[Disaster Recovery Concept 2023](#)

Clearing Conditions of Eurex Clearing AG

[Clearing Conditions](#)

Incident Newsflashes

[Matching engine processing delay](#)

[Order Book Restatement after a market reset event](#)

[Emergency Communication by the exchange (Eurex)](#)

[Eurex Exchange Readiness Newsflash | Emergency communication: Additional Channel Via Bloomberg "NH FM5_EUREX"](#)

[Cash Market | Emergency communication: Additional Channel Via Bloomberg "NH FM5_XETRA"](#)

[Cash Market |Xetra Incident Handling Refresher Newsflash](#)

[Cash Market | Incident handling: Matching engine processing delay](#)

Emergency Playbook – Incident Handling

Standards and Best Practices Defined by Eurex and

Frankfurter Wertpapierbörse

28062023_Deutsche_B
orse_Emergency_Play

21 August 2023

Page 19

Member Section of Deutsche Börse Group

User Guide

Market Status on Website

Eurex Market Status Indicator Description

XETRA Market Status Indicator Description