

# T7 Cloud Simulation

On-demand access simulation

August 2022



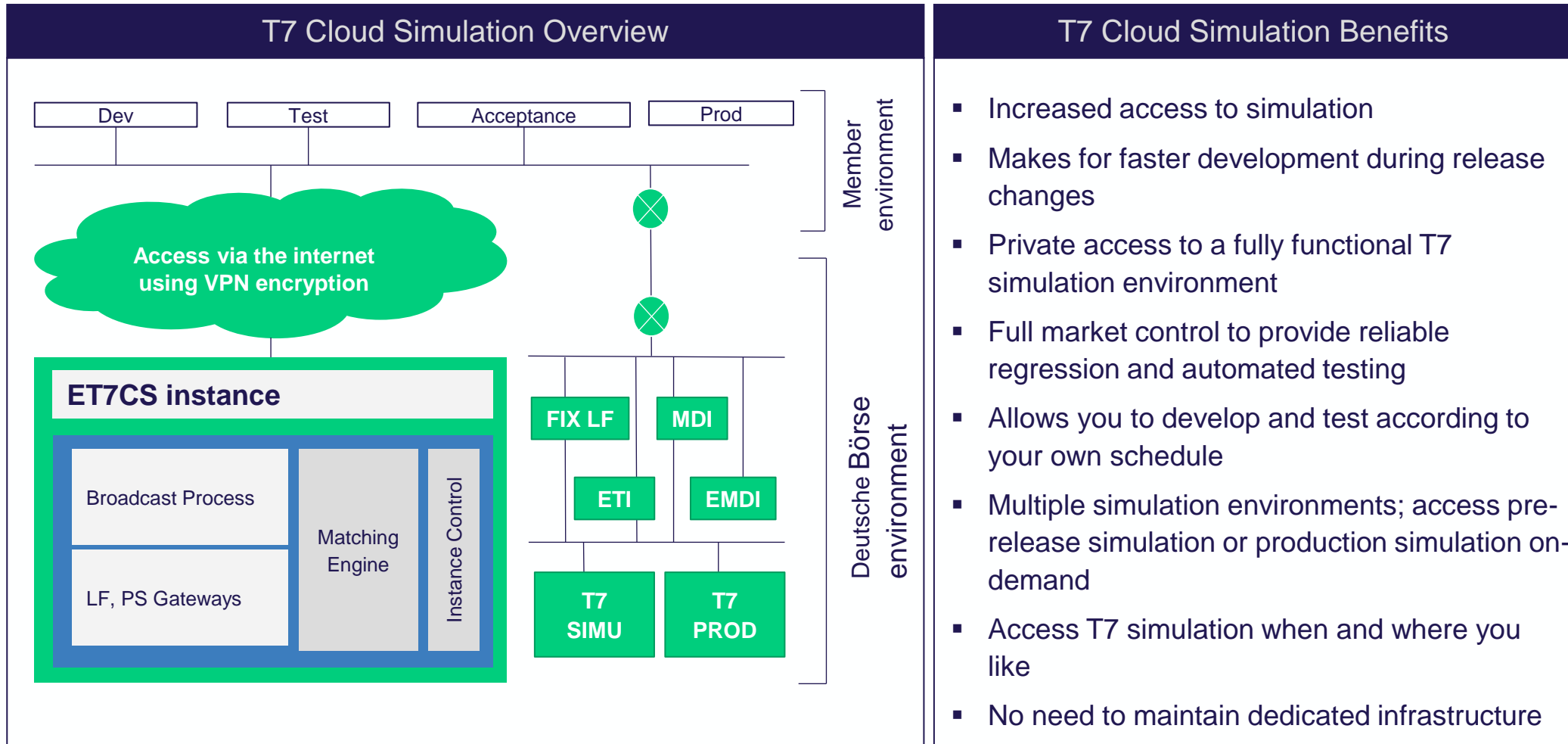
# T7 Cloud Simulation In a Nutshell

T7 Cloud Simulation allows members and customers to ...

- Control the market
  - Create your own order books
  - Set the market trading phase
  - Change the state of specific products
  - Use the Liquidity Generator and Auto Matcher
  - Enter trade reversals
  - Test failover scenarios
  - Predefine market scenarios and test specific strategies that would not be possible in a shared environment
    - Create unique order books
    - Recreate specific trading scenarios
- Test strategies that are difficult / impractical to test in a shared environment
- Perform regression testing based upon own parameters
- Automate application testing to decrease development costs

# T7 Cloud Simulation Service Offering and Benefits

Participants benefit from Deutsche Börse's T7 Cloud Simulation platform.



# T7 Cloud Simulation Overview

- The T7 Cloud Simulation allows participating customers to deploy a private, on-demand instance of a T7 simulation environment for testing and development purposes. This instance is created and runs within a public cloud infrastructure allowing customers access from any computer with internet access anywhere in the world.
- **Its low-cost**, consumption-based billing model offers customers easy access to a commitment-free environment for developing and testing trading software. Participants use and pay for as much access to the T7 Cloud Simulation as they choose. There are no minimums or maximums.
- Participants can choose from two different simulation environments when they request a T7 Cloud Simulation instance. They can choose to access the same version of software that is running in the **regular T7** Simulation environment, the same version running in production, or both at the same time.
- T7 Cloud Simulation offers the possibility to engage in testing of the upcoming T7 software version, one month prior to its deployment in the regular T7 Simulation environment.

# Supported Interfaces

T7 Cloud Simulation offers members access to T7's standard interfaces including:

Trading interfaces	Market data
<ul style="list-style-type: none"><li>▪ Enhanced Trading Interface (ETI)</li><li>▪ FIX LF Interface</li></ul>	<ul style="list-style-type: none"><li>▪ Reference Data Interface (RDI)</li><li>▪ Market Data Interface (MDI)</li><li>▪ Enhanced Market Data Interface (EMDI)</li><li>▪ Enhanced Order Book Interface (EOBI)</li></ul>

Access includes **five** unique member IDs, each enabled with:

- four trader IDs (one supervising trader, one head trader and two regular traders)
- high-frequency ETI sessions
- low-frequency ETI sessions

# T7 Cloud Simulation User Experience

**Step 1: Member logs into the T7 Cloud Simulation (CS) start page and requests an instance**



T7 Cloud Simulation start page

**Step 2: A CS instance spins up for the member**

T7 Cloud Simulation (CS) start page



T7 CS instance Instance Control  
T7 Architecture

**Step 3: Member logs into the Instance Control to control their Cloud Simulation Instance**



T7 CS instance Instance Control  
T7 Architecture

**Step 4: Member connects to CS Instance via VPN over the Internet**



T7 CS instance Instance Control  
T7 Architecture

**Step 5: member develops / tests their software**



T7 CS instance Instance Control  
T7 Architecture

**Step 6: When finished, member logs into the T7 Cloud Simulation Launchpad to terminate the CS instance**



T7 CS Start Page

# T7 Cloud Simulation API Experience

**Step 1: Member logs into the T7 Cloud Simulation (CS) start page and creates an API key**



T7 Cloud Simulation start page

**Step 4: Member connects to their CS instance via VPN over the Internet**



T7 CS instance

T7 Architecture

**Step 2: Member uses the CS API to create instances in code**

T7 Cloud Simulation REST API

T7 CS instance

T7 Architecture

**Step 5: Member develops and tests their software**



T7 CS instance

T7 Architecture

**Step 3: Instances are managed using the CS API, perhaps as part of an automated build or CI pipeline**

T7 Cloud Simulation REST API

T7 CS instance

T7 Architecture

**Step 6: Member uses the CS API to terminate their instances, no human intervention required**

T7 Cloud Simulation REST API

T7 CS instance

T7 Architecture

# T7 Cloud Simulation Limitations

Besides its benefits, Deutsche Börse's T7 Cloud Simulation platform also has its limitations:

- No GUI access, which means:
  - No user/entitlement maintenance
  - No trade enrichment maintenance
  - No transaction size limit maintenance
- No connection to Clearing, which means:
  - You can't test clearing / end-to-end trade processing
  - No Member risk actions will be processed
  - No Transaction-Size-Limit / Max-Order-Quantity maintenance
- You can save data from an instance, by downloading the raw PCAP files for an instance either via the CS API or Launchpad.
- Customer support is limited due to the information available is limited to your private instance
- The order book is empty when starting your private instance
- You can only use the Member ID's provided (it is not possible to create an instance with your specific Member ID)
- There is no Market Supervision and you can't test against other 'real' participants



# T7 Cloud Simulation Outlook

Deutsche Börse's T7 Cloud Simulation platform is highly customizable. We plan to launch further enhancements and functionality to complement our service in future releases, including:

- Sophisticated automated trade-generation scripts
- Intraday product expirations
- Addition reporting and audit trail functionality in the event of updated regulatory requirements
- Historical order book data subscriptions and scenarios

# Thank you!

Eurex Frankfurt AG  
Mergenthalerallee 61  
65760 Eschborn

Customer Readiness Team  
[client.services@deutsche-boerse.com](mailto:client.services@deutsche-boerse.com)

# Disclaimer

© Eurex 2020

Deutsche Börse AG (DBAG), Clearstream Banking AG (Clearstream), Eurex Frankfurt AG, Eurex Clearing AG (Eurex Clearing) and Eurex Repo GmbH (Eurex Repo) are corporate entities and are registered under German law. Eurex Global Derivatives AG is a corporate entity and is registered under Swiss law. Clearstream Banking S.A. is a corporate entity and is registered under Luxembourg law. Deutsche Boerse Asia Holding Pte. Ltd., Eurex Clearing Asia Pte. Ltd. and Eurex Exchange Asia Pte. Ltd are corporate entities and are registered under Singapore law. Eurex Frankfurt AG (Eurex) is the administrating and operating institution of Eurex Deutschland. Eurex Deutschland is in the following referred to as the “Eurex Exchange”.

All intellectual property, proprietary and other rights and interests in this publication and the subject matter hereof (other than certain trademarks and service marks listed below) are owned by DBAG and its affiliates and subsidiaries including, without limitation, all patent, registered design, copyright, trademark and service mark rights. While reasonable care has been taken in the preparation of this publication to provide details that are accurate and not misleading at the time of publication DBAG, Clearstream, Eurex, Eurex Clearing, Eurex Repo as well as the Eurex Exchange and their respective servants and agents (a) do not make any representations or warranties regarding the information contained herein, whether express or implied, including without limitation any implied warranty of merchantability or fitness for a particular purpose or any warranty with respect to the accuracy, correctness, quality, completeness or timeliness of such information, and (b) shall not be responsible or liable for any third party’s use of any information contained herein under any circumstances, including, without limitation, in connection with actual trading or otherwise or for any errors or omissions contained in this publication.

This publication is published for information purposes only and shall not constitute investment advice respectively does not constitute an offer, solicitation or recommendation to acquire or dispose of any investment or to engage in any other transaction. This publication is not intended for solicitation purposes but only for use as general information.

All descriptions, examples and calculations contained in this publication are for illustrative purposes only.

Eurex and Eurex Clearing offer services directly to members of the Eurex Exchange respectively to clearing members of Eurex Clearing. Those who desire to trade any products available on the Eurex market or who desire to offer and sell any such products to others or who desire to possess a clearing license of Eurex Clearing in order to participate in the clearing process provided by Eurex Clearing, should consider legal and regulatory requirements of those jurisdictions relevant to them, as well as the risks associated with such products, before doing so.

Only Eurex derivatives that are CFTC-approved may be traded via direct access in the United States or by United States persons. A complete, up-to-date list of Eurex derivatives that are CFTC-approved is available at: <http://www.eurexchange.com/exchange-en/products/eurex-derivatives-us>. In addition, Eurex representatives and participants may familiarise U.S. Qualified Institutional Buyers (QIBs) and broker-dealers with certain eligible Eurex

equity options and equity index options pursuant to the terms of the SEC’s July 1, 2013 Class No-Action Relief. A complete, up-to-date list of Eurex options that are eligible under the SEC Class No-Action Relief is available at: <http://www.eurexchange.com/exchange-en/products/eurex-derivatives-us/eurex-options-in-the-us-for-eligible-customers...> Lastly, U.S. QIBs and broker-dealers trading on behalf of QIBs may trade certain single-security futures and narrow-based security index futures subject to terms and conditions of the SEC’s Exchange Act Release No. 60,194 (June 30, 2009), 74 Fed. Reg. 32,200 (July 7, 2009) and the CFTC’s Division of Clearing and Intermediary Oversight Advisory Concerning the Offer and Sale of Foreign Security Futures Products to Customers Located in the United States (June 8, 2010).

## Trademarks and Service Marks

Buxl®, DAX®, DivDAX®, eb.rexx®, Eurex®, Eurex Repo®, Eurex Strategy WizardSM, Euro GC Pooling®, FDAX®, FWB®, GC Pooling®, GCPI®, MDAX®, ODAX®, SDAX®, TecDAX®, USD GC Pooling®, VDAX®, VDAX-NEW® and Xetra® are registered trademarks of DBAG. All MSCI indexes are service marks and the exclusive property of MSCI Barra. ATX®, ATX® five, CECE® and RDX® are registered trademarks of Vienna Stock Exchange AG. IPD® UK Quarterly Indexes are registered trademarks of Investment Property Databank Ltd. IPD and have been licensed for the use by Eurex for derivatives. SLI®, SMI® and SMIM® are registered trademarks of SIX Swiss Exchange AG. The STOXX® indexes, the data included therein and the trademarks used in the index names are the intellectual property of STOXX Limited and/or its licensors. Eurex derivatives based on the STOXX® indexes are in no way sponsored, endorsed, sold or promoted by STOXX and its licensors and neither STOXX nor its licensors shall have any liability with respect thereto. Bloomberg Commodity IndexSM and any related sub-indexes are service marks of Bloomberg L.P. PCS® and Property Claim Services® are registered trademarks of ISO Services, Inc. Korea Exchange, KRX, KOSPI and KOSPI 200 are registered trademarks of Korea Exchange Inc. BSE and SENSEX are trademarks/service marks of Bombay Stock Exchange (BSE) and all rights accruing from the same, statutory or otherwise, wholly vest with BSE. Any violation of the above would constitute an offence under the laws of India and international treaties governing the same.

The names of other companies and third party products may be trademarks or service marks of their respective owners.

Eurex Deutschland qualifies as manufacturer of packaged retail and insurance-based investment products (PRIIPs) under Regulation (EU) No 1286/2014 on key information documents for packaged retail and insurance-based investment products (PRIIPs Regulation), and provides key information documents (KIDs) covering PRIIPs traded on Eurex Deutschland on its website under the following link: <http://www.eurexchange.com/exchange-en/resources/regulations/eu-regulations/priips-kids>.

In addition, according to Art. 14(1) PRIIPs Regulation the person advising on, or selling, a PRIIP shall provide the KID to retail investors free of charge.