WEBINAR: Borsa Italiana Migration to Euronext Optiq®

Migration Sequencing and Functional Highlights

EURONEXT

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Speakers

Fabrizio Testa

CEO of Borsa Italiana & Group Head of Fixed Income

Borsa Italiana

Georges Lauchard

Chief Operating Officer

Euronext

Enrico Pellizzoni

Head of Projects & Functional Change for Group Cash & Derivatives and Italy Secondary Markets

Borsa Italiana

Nicole Agopian

Head of Technology Partnerships

Euronext

Flavio Ravotto

Senior Manager, Customer Relationship Management Technology & Client Connectivity

Borsa Italiana

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Agenda

1. Migration sequencing
2. Optiq® trading platform in a nutshell
3. Functional highlights of the main changes
4. Physical connectivity to Optiq®
5. Operational readiness
6. Q&A

Migration Sequencing

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Borsa Italiana Migration Timeline and Scope

Migration timeline as currently anticipated

0. **End of 2022 – Optiq® upgrades for Euronext's legacy clients**
1. **Q1.2023 – Cash: Equities (incl. MIV market) and ETF**
2. **Q2.2023 – Cash: Warrants & Certificates, Fixed Income and other Cash markets (including EuroTLX)**
3. **End Q2.2023 – Financial Derivatives, Energy Commodities**

- The ETF migration is now planned for Phase 1, while Warrants & Certificates is scheduled for Phase 2
- The Agrex market will be wound down alongside the migration of Borsa Italiana on Optiq®

Detailed migration timeline and related confirmation will be shared in due course

- For our clients to experience a smooth migration of Borsa Italiana Markets onto Euronext systems according to the anticipated timeline, we kindly **encourage them to secure time, resources and budgets in 2022 and 2023**. We are conscious of the efforts required from our clients and thank you in advance.
- Technical resources and capabilities will be required to configure and prepare systems to migrate and update connectivity links (for Italian and other Euronext markets).
- **MTS is not in scope for the migration.**

The Borsa Italiana migration onto Optiq and related changes are subject to regulatory approval

The Optiq® Platform

The Optiq® architecture

Core components of the trading chain

1 Order Entry Gateway (OEG)

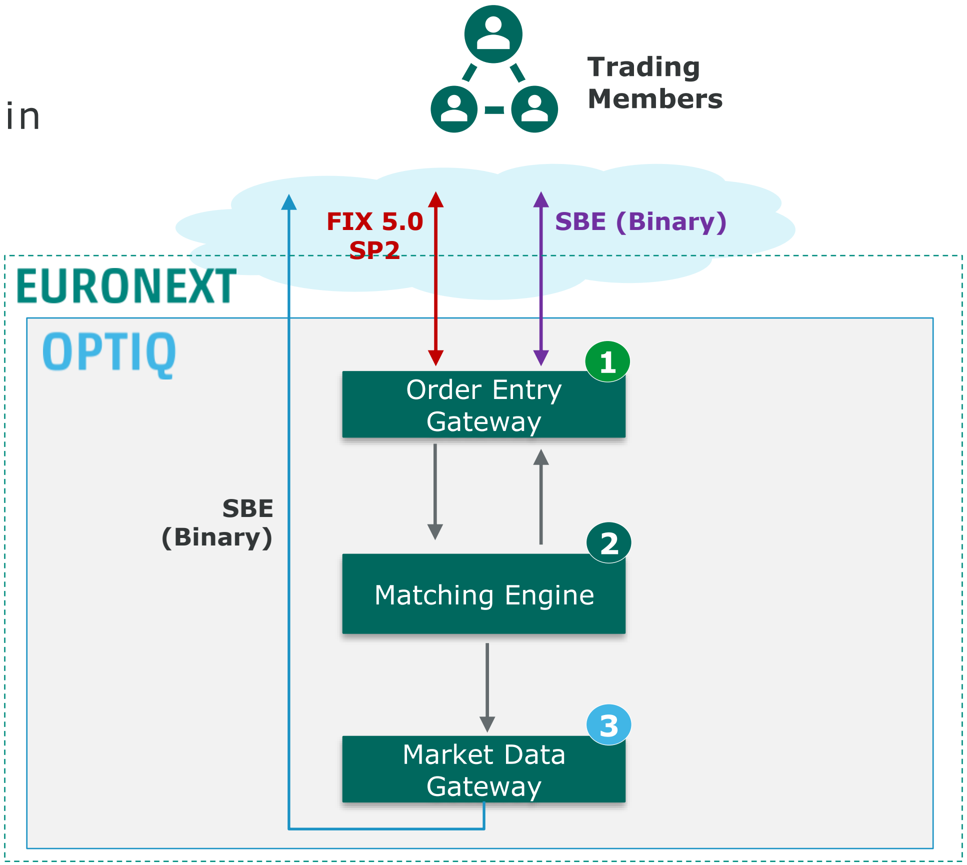
- Two protocols available:
  - **FIX 5.0 SP2**
  - **SBE (Simple Binary Encoding)**

2 Matching Engine

- Management of the order book

3 Market Data Gateway (MDG)

- Market data provided via multicast feed in SBE format



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Logical segregation per type of asset class

- Euronext tradeable instruments are listed across dedicated and independent **Optiq segments**
- An Optiq segment defines a **universe of instruments** belonging to the same asset class; they share the same common financial properties
- For capacity and performance, a segment can be split in multiple *partitions*

Borsa Italiana instruments will be listed on Optiq segments

CASH SEGMENTS	Equities	Fixed Income	ETFs & Funds	Warrants & certificates	Euronext Block (MTF)
DERIVATIVES SEGMENTS	Equity Derivatives	Index Derivatives	Commodity Derivatives		
PUBLICATION SEGMENTS	Indices	APA	Irish Bonds & Funds	Euronext FX	

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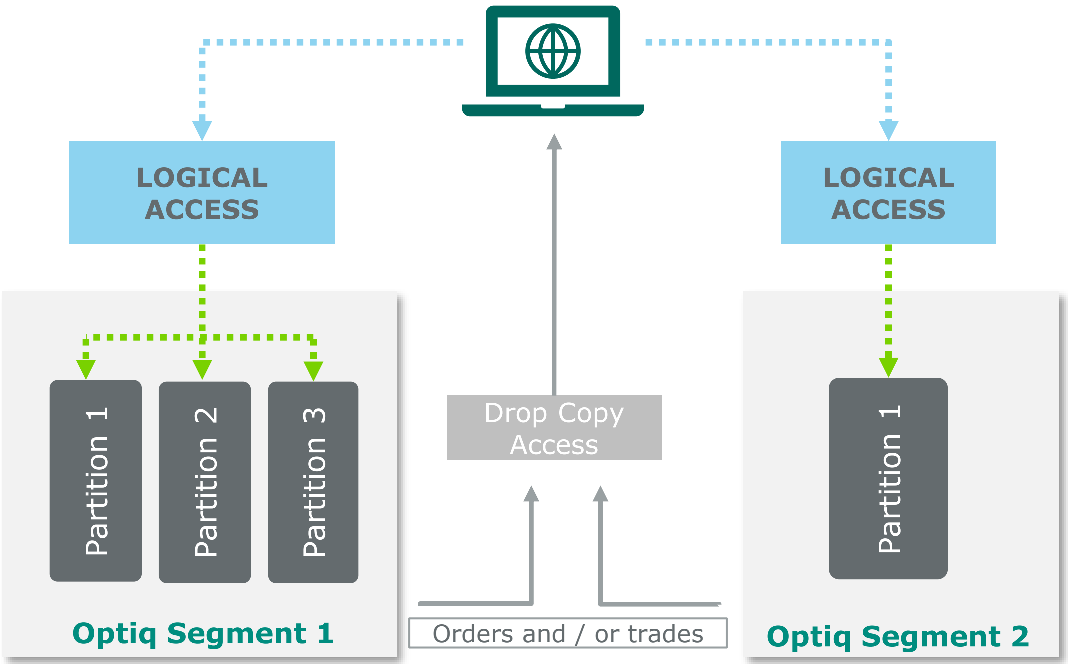
Connectivity to Optiq Matching Engine



A **Logical Access (LA)** represents the logical access point to an Optiq Segment

- Members should have at least one **LA for each segment they have trading authorisations on**
- **The same LA** can be used to:
  - Trade on **multiple Euronext markets** (including Borsa Italiana ones that <u>will not have a dedicated partition/access</u>)
  - Connect to all partitions of a segment

All instruments of the same asset class (i.e. within an Optiq segment) for all Euronext markets are load-balanced accross the partition(s) of that segment

<u>Italian products will also be load-balanced over the various partitions</u>

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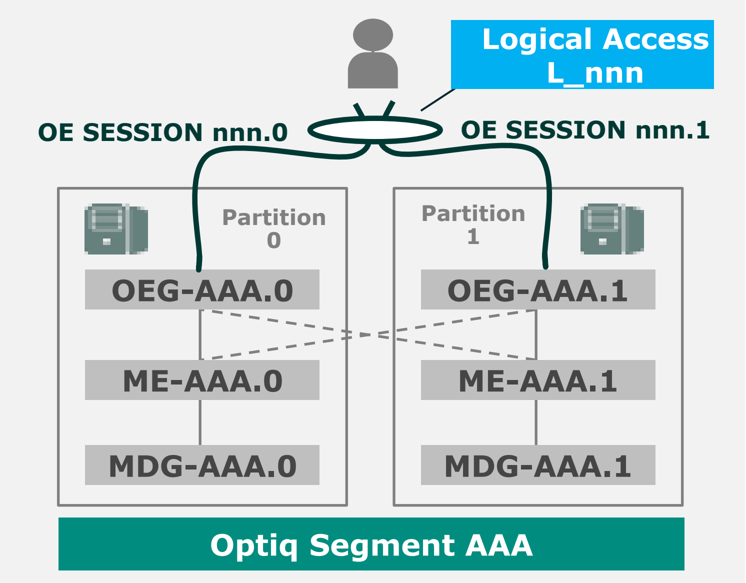
Logical Access Capacity & Throttling

Clients can select capacity (TPS) of LA based on their trading activity and member profile



*Clients will be asked **to confirm the number, type and capacity of Logical Accesses** they will need in production prior to the Go-Live of each phase of the Borsa Italiana Migration**

- Different types of Logical Accesses available:
  - Standard sessions
  - Dedicated sessions for Market Makers (Derivatives)
- Capacity (TPS) defined at partition level: Clients can establish a physical connection to each partition of a segment and send messages directly to the partition on which the instrument is located, therefore benefiting from the same TPS on each partition

- Optiq offers a **flexible and predictable throttling mechanism**
- Each session has a maximum number of messages i.e. the **throttling limit**
- For messages exceeding the throttling limit, customers can choose whether to **enable the queuing service** or **use the default rejection mechanism** for the messages over the limit

* Depending on pre-authorisations

Functional Highlights

Functional Enhancements

The key goal of the Optiq® migration project is to take the best from the current experience of Borsa Italiana and Euronext, maintaining key local specificities with strong market value and harmonising across markets elsewhere

Several core Optiq functionalities **will be adopted** by Borsa Italiana, in some cases with **upgrades** from the successful experience from MIT Exchange or SOLA

A few Borsa Italiana functionalities **will be decommissioned** due to **limited usage** by participants, or to favour **harmonisation** across all Euronext markets

A few existing functionalities of the Italian markets **will be introduced** into Optiq such as reference and official prices, public distribution models for fixed income and equities, pre-trade controls and sponsored access, market models for Trading After Hours and MIV, stop orders[1], automatic generation of calendar spreads (derivatives), Execution Source Code, EuroTLX specific features etc.

(when not configurable by venue)

(1) For derivatives markets, triggered by last trade price only.

Impact on Italian markets   Impact on Euronext Legacy markets

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Examples of mutual benefits for clients

Optiq® behavior for market orders (cash markets) will be enhanced for all markets will be extended to Italian market, while Self Trade Prevention (STP) will be enhanced for all markets

	On Italian markets - Today	On Optiq (planned enhancements in green)
Market orders (Cash markets)	▪ Aggressive only, cancelled if not executed at order entry	▪ Persistent if not executed, unexecuted quantity will remain in the book and will be available for execution[1] ▪ Current behaviour of Borsa Italiana can be reproduced by adding the 'IOC' order attribute
Self Trade Prevention (All markets)	▪ Static configuration at logical access (LA) level ▪ Applicable to groups of LAs ▪ STP rules: cancel resting and aggressive, both orders[2] or residual quantity[2] ▪ Applicable to all trading capacities ▪ Does not apply to (i) quotes (cash markets) and (ii) "Fill-or-Kill" orders	▪ STP option is specified at order entry level ▪ Matching orders must have the same STP rule and Firm ID Further segregation offered with the STP ID to replicate the "group of CompIDs / TraderIDs" logic ▪ STP rules: cancel resting or aggressive. New **"cancel both"** option will be developed ▪ For cash markets, only "liquidity provider" account type. With the migration, it will be extended also to "House" orders ▪ Does not apply to (i) quotes (cash markets), (ii) market to limit, (iii) cross orders and (iv) implied orders (derivatives)

(1) At the best of: (i) the last traded price (or the Dynamic Collar Reference Price if the instrument has not traded locally yet), (ii) the best limit price on the Market Order side, (iii) the incoming order price, if the incoming order has a limit price. (2) Technically available, inactive for cash markets. Available for SOLA derivatives.

Impact on Italian markets   Impact on Euronext Legacy markets

Main Optiq® features extension (non-exhaustive list)

Across all Euronext markets

	EXISTING OPTIQ® FUNCTIONALITIES EXTENDED TO ITALIAN MARKETS	FUNCTIONALITIES BENEFITING TO LEGACY EURONEXT MARKETS
All markets	▪ Logical Access & throttling mechanism ▪ Mass Cancel ▪ Cancel-on-disconnect ▪ Self-Trade Prevention (STP) + *new features* ▪ Market and market-to-limit orders ▪ Good till cancel & till date ▪ Large-in-scale and pre-agreed transactions ▪ Auction uncrossing algorithm	▪ Self-Trade Prevention *(new features)* ▪ Random close for intraday auctions[2] ▪ Price and capacity controls at order entry[2] ▪ RiskGuard *(new features)* ▪ Trade Unique Identifier (new TVTIC)
Cash markets	▪ Iceberg orders ▪ Trade-at-last (replacing CPX phase) ▪ Request For Execution (SeDeX and Cert-X) ▪ RFQ	▪ Reference prices[2]
Derivatives markets	▪ Strategy trading ▪ Request for cross (replacing IDEM's CPI) ▪ Market makers' protection ▪ RiskGuard (pre-trade controls) +*new features*[1]	▪ Stop orders[2] ▪ Automatic generation of calendar spreads[2] ▪ Execution source code (Tag 1031)

(1) Functionality that will be enhanced on Day 1.
(2) Configurable, impact subject to ongoing assessments.

Impact on Italian markets   Impact on Euronext Legacy markets

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Decommissioned functionalities

- A few MIT Exchange and SOLA functionalities will be decommissioned to favor **harmonisation** or due to **limited usage**
- In specific cases, development in Optiq® is currently planned for **future releases**, after the completion of the migration project

CASH MARKETS

- Quotes
- Named and unpriced limit orders
- Anti-spoofing for auction uncrossing[1]
- Italian market specific RFQ features[1]: auto-RFQ, SSTI waiver, dedicated tick

DERIVATIVES MARKETS

- Iceberg and legacy SOLA market-to-limit orders
- Stops at Bid / Ask
- Responding Market Maker
- Non executing broker[1]
- Deferred publication

(1) Functionality to be developed after the completion of the migration project.

Impact on Italian markets

Impact on Euronext Legacy markets

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Focus on 8 key changes

The migration will introduce some functional changes, or adjustments of market model

1. Request For Execution (Securitised Derivatives markets – Warrants & Certificates)
2. Execution of bilateral transactions
3. Pre-trade risk controls and Sponsored access (RiskGuard)
4. Strategy Trading (Derivatives markets)
5. Market data
6. Trade Unique Identifier (new TVTIC format)
7. Price Collars & Circuit breaker mechanism
8. Member portal

The Borsa Italiana migration onto Optiq and related changes are subject to regulatory approval

1 Request For Execution

SeDeX and Cert-X will benefit from the Request For Execution (RFE) model already in place on Euronext markets

Euronext's existing market model based on Central Order Book trading with active liquidity provision will be extended to the Italian markets:

- Trades must happen within the Liquidity Provider[1] bid-offer spread - investors can trade against the LP or against each other, within the LP bid-ask spread
- When a potential match is detected in the COB, a Request For Execution (RFE) message is sent to the LP
- Within a re-defined time window, execution is frozen and the LP can provide up-to-date prices
- At the end of the time window, matching happens by price-time priority
- Trading is suspended if the Liquidity Provider is absent

Features that will be maintained from Borsa Italiana angle

— Direct distribution model
— Possibility to setup products for professionals only
— Post trade setup incl. bilateral netting settlement
— Bid-only quote-driven ('offer only' not allowed)

Adjustments for the new market model

— Discontinued: self-execution prevention, quoting period and Y, Z circuit breakers
— New closing price algorithm
— Market orders, GTD and Stop-on-quote enabled
— Knock-In, Knock-Out, Payment After Knock-Out
— Virtual Offer Price

New features that will be implemented

— Extended hours will be introduced for Italian Markets (further details to be communicated in due course)

No change is expected for Euronext's legacy markets

(1) Additional market makers can be present to further support liquidity in the product.

Impact on Italian markets Impact on Euronext Legacy markets

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2 Execution of bilateral transactions

Euronext Trade Confirmation Service (TCS) and Optiq order types for cash markets will be used for the execution of bilateral transactions. For derivatives, bilateral transactions will be supported by the Euronext existing Wholesale order functionality.

CASH MARKETS (PLANNED ENHANCEMENTS IN green)

- A single service to replace cross and BTFs (**Trade Confirmation Service**), enabled at Logical Access level
- Support to MiFIR pre-trade LIS waiver and NT waiver
- Illiquid instrument waiver will be introduced for transactions in non-equity instrument below LIS
- Price controls vs. VWAS[1] or last trade price
- Support for Volume Weighted Average Price transactions[2]
- Support for deferred publication of LIS transactions for shares and ETFs[2]

\+

- **Guaranteed cross / principal order type** available in Optiq® for 'internal' transactions within the BBO

DERIVATIVES MARKETS

- A single order type to replace cross, BTFs and bundle orders
- Support for **multi-instrument and multi-counterparty** transactions (within the same contract)
- Requires the initiator to communicate a transaction ID to reactors to get the trade executed
- Execution workflow to be completed within 5 minutes, otherwise the order is cancelled
- Support for **delta neutral transactions** (futures vs. options) and **stock contingent transactions**[3]

(1) For NTs in equity and equity-like instruments. (2) Activation of these functionalities for Italian markets is subject to regulatory approval. (3) Subject to post-trade readiness.

Impact on Italian markets   Impact on Euronext Legacy markets

3 RiskGuard®

Euronext RiskGuard® service will be enhanced and extended to all Euronext Legacy and Italian Cash & Derivatives markets, including **Sponsored Access**[1] services

Service description & key benefits

- Currently available on Euronext Derivatives markets through FIX API and web-based interface (Q2 2022)
- Offers **real-time controls** and **configurable limits to order entry of a trading firm** (for clearers), an internal desk or a DEA client (for trading firms)
- Embedded with the core of Optiq Matching Engine
- Possibility to **segregate controlled entities with a dedicated Firm ID** and a **dedicated logical access**
- **Consistent management of multiple risk managers**
- **Dedicated drop copy channel** for risk managers
- **Commands** can be triggered with **flexible granularity**[2]

Pre-Trade Risk Controls for Cash and Derivatives markets (new features in blue)

- Kill Switch
- Block / Unblock
- Maximum Order Size Limit (Derivatives markets)
- **Maximum Order Volume Limit (Cash markets)**
- **Maximum Daily Exposure Limit (Cash & Derivatives markets)**

Additional granularity

- **Source ID**

(1) Sponsored Access is a method of direct access to the market to allow market intermediaries to authorize their customers ("Sponsored Firm") to transmit orders to the market electronically without using the technological infrastructure of the market participant ("Sponsor"). (2) FirmID, logical access and Mifid 2 identifiers (Execution Within Firm Short Code and Client Short Code). Granularities vary for each command.

Impact on Italian markets Impact on Euronext Legacy markets

4 Strategy Trading

Optiq® will enhance IDEM strategy trading by introducing pre-defined strategies and a new implied matching model (EDIM) for less liquid derivatives.

More than 80 pre-defined strategy templates available:

- Call/put spread
- Call/put butterfly
- Calendar spread
- Guts
- 2x1 ratio call/put spread
- Straddle
- Strangle
- Call/put ladder
- Condor
- Call/put volatility trade
- Call/put spread vs. underlying
- Straddle vs. buying/selling und.
- etc.

- Wide range of strategies, including delta neutral and stock contingent trades[1]
- Each strategy has its own trading code
- Available for both on-book trading and wholesale transactions[2]
- Two implied pricing models for on-book trading:

Event-driven implied model (EDIM)

Participants can:
> insert an order in the strategy book
> require the system to automatically generate an aggressive order based on the best prices available in the strategy legs' order book
> EDIM implied orders are not persistent

Spontaneous (i.e. real-time) implied model (SIM)[3]

Similar to current IDEM facility, this model populates the strategy order book with bid and offer prices in real-time, based on the best price conditions available in the strategy legs' order book. SIM implied prices are always available for matching

IDEM use of SIM and EDIM models will be communicated in due course

(1) Subject to post-trade readiness. (2) Where allowed by MiFIR package order waiver. (3) SIM is under introduction for legacy Euronext markets.

Impact on Italian markets   Impact on Euronext Legacy markets

5 Market Data Model

- Euronext offers Market Data through different packs to which clients can subscribe
- Packs are produced for sets of instruments defined according certain criteria such as the *Asset Class* (MiFID II requirement)

All details about packs and channels for the Italian markets will be provided in due course, including bandwidth requirements

- *For Italian Markets, a TCP-compressed feed will be provided to cover requirements of low bandwidth customers*
- *FTSE Indices will not be disseminated by Optiq*

* Potential provision of the best 10 level of prices/orders (BBO10) under study

Most common packs offered

- Full market by order & BBO **(FBOU)**
- Full market by limit & BBO **(FBMU)**
- Best limits only **(BBBO)**
- Instrument characteristics, scheduled phases, market administration messages & MiFID II compliant trade messages **(REFT)**

Customer bandwidth available

Additionally, for optimised feed for each member, three (3) customer bandwidths are offered:

- **100 Mb:** Feed is *compressed*
- **1 Gb:** Feed is *shaped* (<u>and might also be compressed</u>)
- **10 Gb**: Feed is *unshaped* (<u>not available for all asset classes</u>)

Impact on Italian markets Impact on Euronext Legacy markets

6 Trading Venue Transaction Identification Code

All markets will benefit from a new unique Trade Identifier (***TVTIC***, allowing an end-to-end reconciliation across the trading chain)

- A Unique Identifier will be used as the **one single reference for a trade** across the market chain supporting data integration and reconciliation (internally and externally)
- It will be implemented across all Market segments and systems

Initial TVTIC	**Execution ID + ISIN**
Enhanced TVTIC	**Symbol Index + EMM + Execution ID**
Date + Enhanced TVTIC	**Date + Symbol Index + EMM + Execution ID**
Unique ID (**TARGET**)	**New ID generated by the matching engine**

Id Format (still under study)

- **11 characters** long (Unique Trade Identifier)
- **Available in a dedicated field in trade messaged** (in a dedicated message)
- **Available in all applications**
- **Unique per ISIN, MIC & currency** over at least 1 month
- **Fully regulatory compliant**

Impact on Italian markets Impact on Euronext Legacy markets

7 Collars & Circuit breaker mechanism

Collar management model will be adjusted

CASH MARKETS	DERIVATIVES MARKETS

Order price control & X-parameter

- On Milan markets, Order prices are validated at order entry against the Static reference price and rejected in case the price is outside the allowed price band, **this will be implemented on Optiq** *(potential application to legacy Euronext's cash markets under study)*

- Euronext existing controls will be applied to Milan derivatives
  - Based on fair values calculated by the exchange and updated dynamically along the trading day
  - One single parameter in place for orders and trades validation
  - Orders submitted outside the dynamic collars will be rejected
  - Future Spike Protection (FSP) for liquid futures
- **FSP will be modified (FSP at auction and continuous phase will work as a trade validation parameter)**

(*potential application to legacy Euronext's derivatives markets under study*)

Other

- **Cash:** Intraday changes to the static and dynamic prices will be **disseminated via market data**
- **Derivatives:** Intraday changes to the multipliers used to determine price collars will be **disseminated at contract level**
- Breach of the Collars will cause volatility reservation (no former concept of circuit breaker)
- Length of Volatility reservation is not fixed

(Cash vs. Derivatives specific behaviors published with market specs)

8 A new member portal

A new **integrated portal called MyEuronext,** will be provided to all markets participants

- MyEuronext portal will become the official membership platform for **all Euronext markets**, allowing activities such as:
  - Manage company data and contact details;
  - Manage trading profile and related trading identifiers;
  - Configure technical access to trading systems (Logical Access);
  - And many more…
- Further information (availability dates, onboarding process) will follow shortly
- Current Borsa Italiana Member Portal will be replaced by MyEuronext

Aligned with Euronext's digital ambition programme, Euronext's strategy is to use MyEuronext portal to enhance the way files (such as EOD, EFS, …) are managed and distributed to customers

Impact on Italian markets   Impact on Euronext Legacy markets

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Connectivity to Optiq®

Physical Connectivity to Optiq®

Post-Optiq migration, all markets will be operated from the Aruba IT-3 Data Centre (Bergamo, Italy), Euronext Group's new primary DC

- Customers that are currently using the Borsa Italiana colocation facility should set-up new colocation footprint in the new Euronext colocation halls
- **Connectivity to Italian markets currently available via the LSEG will be discontinued shortly**, clients will be contacted in the near future to set up alternative connectivity options

Euronext will provide clients with bidirectional connectivity between the Euronext primary and Borsa Italiana Data Centres until completion of the Borsa Italiana migration to Optiq

Access to the new Data Centre will be made available via **all other Euronext and Borsa Italiana connectivity options**

- **CMC,** direct to Aruba and from the London PoP – and Aruba co-location)
- **Borsa Italiana CMC and Bit Network**
- **Borsa Italiana Co-Location** (until the end of the migration)

as well as via Service Providers being set up to connect to Euronext market (connectivity model to be adapted)

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Operational Readiness

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Client readiness: support & next milestones

Euronext will support all clients from their onboarding to their full readiness

Further Webinars will be organised throughout **2022** and **2023** to keep clients updated

One-to-One meetings and deep dive sessions will be organised to address/assess specific clients' topics and collect clients' feedback

Dedicated client support team already available to follow client readiness.
Optiqmigration@euronext.com

Dedicated page is already available on the **Connect Portal** (and on the legacy Borsa Italiana website)

Guide to new Trading Systems (including detailed *Gap Analysis*) will be published soon sharing all functional and technical changes

Detailed **Technical Specifications** will be published in due course

Regular communications will be **sent**
(Info Flash, Notices, …)

Full details of the current Optiq® platform already available within the technical documentations on the **Euronext website**

Client readiness

EUA will be made available for client by Q3.2022
Migration guidelines should be communicated in due course with more detail on the release strategy and related guidelines

Conformance and Front-to-Back (incl. clearing and settlement) **tests** will be mandatory for all clients **prior Go-Live** (this will apply to each phase of the migration and to all clients)

Two Dress Rehearsals will be organised for each phase of the migration. Participation to these tests will be **mandatory for all clients** to test connectivity to new Trading & Market data services in production

Trading and Market Data services currently in use for Borsa Italiana will remain active and unchanged until migrated

Some changes will be delivered in production on markets already running on Optiq® by the end of 2022, the timeline and readiness related to the activation of the functionality will be managed following Euronext's current process

QUESTIONS & ANSWERS SESSION

If there is not enough time to answer your questions, we will get back to you following the presentation. Thank you!

Obrigado **Dank Je** **Merci** **Grazie** **Takk** ***Thank You***