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**EURONEXT MARKETS – OPTIQ® SBE TEMPLATE POLICY FOR THE  
MIGRATION OF DERIVATIVES MARKETS**

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## PREFACE

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### PURPOSE

This document intends to provide general technical information about Euronext Markets – Optiq® SBE Template Policy for the Migration of Derivatives Markets.

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### TARGET AUDIENCE

The primary audience of this document is Developers, Exchange Connectivity Managers, Trading Support Teams and anybody involved in the setup and the configuration of SBE Template Order Entry Gateway (OEG) & Market Data Gateway (MDG) in the End User Acceptance (EUA) and Production environments.

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### WHAT'S NEW?

The following lists only the most recent modification made to this revision/version. For the Document History table, see the [Appendix](#).

VERSION NO.	DATE	CHANGE DESCRIPTION
1.0	May 2019	Initial version

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## 1. INTRODUCTION

With the migration of Euronext Derivatives Markets to Optiq in November 2019, all Euronext Markets will be operated on the Euronext proprietary platform, Optiq.

Optiq will be the unique cross asset trading platform across Euronext products. It will offer clients with a standardized API on both Order Entry (via Optiq Order Entry Gateway [OEG]) and Market Data (via Optiq Market Data Gateway [MDG]), allowing for :

- Harmonized messages across markets for order entry,
- Harmonized messages across markets for market data,
- SBE protocol for both order entry and market data,
- FIX protocol for order entry.

Through the SBE protocol, Euronext clients have the possibility to use one single technical framework for all asset classes, and no longer require to use dedicated APIs for Cash or Derivatives markets. For market data using SBE protocol a single feed handler will be able to manage the market data feed for all asset classes. This harmonization enables clients to benefit from rationalization opportunities through the use of a single framework across facilities and Euronext Markets.

This Technical Notice is published by Euronext in the context of the migration of Derivatives Markets onto Optiq, following the migration of the Cash Markets in June 2018. It aims to provide clients with the updates to the SBE implementation policy, as well as the:

- Drivers and Objectives for SBE use and version strategy, and
- Guidance for clients for the SBE version policy during H2 2019 and until the Go-Live of Derivatives Markets in November 2019.

The two following sections are reminders of notions used in this note about Optiq and the SBE protocol.

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### 1.1 GLOSSARY OF SBE PROTOCOL NOTIONS AND SBE IMPLEMENTATION IN OPTIQ

- **SBE template:** The SBE template is an xml file provided by the exchange detailing the structure of messages and fields technically. It is to be loaded by clients into their exchange facing systems in order to use the structures required by the API, in the same way they are built by Optiq. The SBE template ensures that both client and Exchange use the same message templates, field, formats and authorized values.
- **SBE version:** Each SBE template is published with an associated version, being a numerical identifier (e.g. 105)
- **SBE semantic version:** Each SBE version is associated to a semantic version, being the version of Euronext SBE message specification it applies to. Both versions are provided in SBE Template (e.g. SBE Version 200 Template xml file has a dedicated 'semantic version' field, populated with value "3.0.1", being the version of the associated Euronext messages specifications).
- **SBE forward-compatibility:** The SBE forward-compatibility is a set of rules ensuring that any party (resp. client or Optiq) using latest SBE versions can still technically communicate with another (resp. Optiq or client) that has not upgraded yet. For example:
  - On order entry, with Optiq on SBE version 105, a client using the SBE version 106 can still send messages to Optiq and receive from to Optiq, both processing them correctly.
  - On market data, with Optiq on SBE version 105, a client using the SBE version 107 can still receive the messages sent by Optiq and process them correctly.

- **SBE backward-compatibility:** The SBE backward-compatibility is a set of rules ensuring that any party (client or Optiq) using former SBE versions can still technically communicate with another (resp. Optiq or client) that has already upgraded. For example:
  - On order entry, with Optiq on SBE version 106, a client using the SBE version 105 can still send messages to Optiq and receive from to Optiq, both processing them correctly
  - On market data, with Optiq on SBE version 107, a client using the SBE version 105 can still receive the messages sent by Optiq and process them correctly.
- **SBE compatibility:** Two versions of SBE are said “Compatible” when both backward-compatibility and forward compatibility rules are guaranteed between both.
- **Optiq segment, OEG SBE template and MDG SBE template:** Optiq is built on multiple segments, a functional sub-division of the Market. With the migration of Derivatives markets to Optiq, Euronext Markets will be hosted on 10 Optiq Segments:
  - Equities
  - Funds
  - Fixed Income
  - Warrants and Certificates
  - Indices
  - Block
  - Equity Derivatives
  - Index Derivatives
  - Financial Derivatives
  - Commodities

Each Optiq segment is independent from one another. As a consequence, each Optiq segment will be managed under one unique SBE Version. This version applies to both order entry API and market data API, through two SBE templates:

- ◆ Order Entry (OEG) SBE template: description of Optiq OEG SBE API messages structure and fields
- ◆ Market Data (MDG) SBE template: description of Optiq MDG SBE API messages structure and fields

Both OEG and MDG templates always have the same SBE Version.

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## 1.2 SBE PROTOCOL IMPLEMENTATION DRIVERS AND TARGET

With its implementation of the SBE protocol, Optiq allows clients to:

- Harmonize their technical infrastructure when connecting to Euronext for both market data and order entry, through the use of a single protocol, API and framework (e.g. a market data feed handler would be able to manage any Optiq segment market data feed).
- Reduce the Euronext footprint on their infrastructure and development, by reduced Exchange driven changes through SBE compatibility as described in the following example (SBE versions used in this example are indicative only).

In this example, Euronext aims to deliver an Equities project which has an impact on the SBE API. The SBE API for the Equity Derivatives Segment must be upgraded by Euronext from version 105 to 109:

Party	Required to do the upgrade ?	SBE Version before the upgrade	SBE Version after the upgrade	Compatibility
<b>Client A :</b> <u>has an incentive in the Equities initiative</u>	Yes	105	<b>109</b>	Yes
<b>Client B :</b> <u>has no incentive in the Equities initiative</u>	No	105	105	Yes
<b>Optiq Segment : Equities</b>	Yes	105	<b>109</b>	Yes
<b>Optiq Segment : Other</b>	No	105	105	Yes

- ◆ Client A using SBE version 109 can connect and trade on all Optiq Segments.
- ◆ Client B using SBE version 105 can connect and trade on all Optiq Segments but cannot use the 109 version introduced fields / Messages for the dedicated initiative – with no impact on his or her activity. Client B was not required to take on developments on an Exchange-driven change.

**In order to achieve this goal, Euronext must guarantee the SBE compatibility of all SBE versions in Production.**

**In case an Exchange-driven changes breaks compatibility rules, which Euronext will avoid as much as possible, clients will be notified in due time.**

### 1.3 CONTEXT OF THE SBE IMPLEMENTATION THROUGH THE COURSE OF THE OPTIQ PROGRAMME

Euronext has completed the first two phases of the migration to Optiq with:

- The migration of market data for Euronext Cash and Derivatives markets to Optiq MDG (Market Data Gateway) in June 2017 (Phase 1), and
- The migration of Euronext Cash markets to Optiq OEG and Matching Engine (ME) in June 2018 (Phase 2).

Phase 3 of the programme consists in the migration of Euronext Derivatives markets to Optiq OEG and ME in November 2019.

The SBE principles presented above were not always guaranteed by Euronext during the first two phases of the Optiq programme. As a result:

- Euronext Derivatives Segments (Equity Derivatives, Index Derivatives, Financial Derivatives and Commodities) are managed under SBE Version 7 (with its associated MDG SBE Template)
- Euronext Cash Markets Segments (Equities, Fixed Income, Funds, Indices, Warrants and Certificates) are independently managed under SBE Versions > 103 (will be indicated as 1XX in the following sections).
- SBE Versions 1XX are compatible, but SBE Versions 7 and 1XX are **NOT** compatible.

The first published SBE Template for Derivatives Segments for the Optiq migration is Version 200. After the migration of Derivatives markets to Optiq, all following SBE versions will carry a version > 200 (2XX) on all Euronext Markets.

**The next section aims to describe how this goal will be achieved in the course of H2 2019.**

**Note** Versioning of SBE is not required to be strictly iterative. If the current version is 110, the next version can be a 120 compatible version still complying with the protocol rules.

## 2. SBE VERSIONING POLICY IN H2 2019

### Executive Summary

1. It is strongly recommended to clients to systematically upgrade to the latest published 2XX version for the migration of Derivatives markets on Optiq Euronext
2. Euronext guarantees Compatibility of the latest 2XX SBE version with any previously published 1XX version e.g. client can use the latest 2XX version that will be validated for Go-Live for both Cash and Derivatives Market Data and Order Entry. Client can upgrade their API for all Segments.
3. Euronext will technically upgrade the Cash Markets segments to the latest 2XX SBE versions, post Go-Live of Derivatives Markets on Optiq.

### 2.1 CONTEXT: SBE VERSIONS LIVE AS OF MAY 2019

The table below displays the SBE template versions as of May 2019 on Euronext Markets per Optiq Segment:

Optiq Segment		Latest published SBE template	Earliest Supported SBE template	Compatibility
Equities (OEG and MDG SBE Template)		109	102	1XX
Funds (OEG and MDG SBE Template)		109	102	1XX
Fixed Income (OEG and MDG SBE Template)		109	102	1XX
Warrants and Certificates (OEG and MDG SBE Template)		109	102	1XX
Equity Derivatives (MDG SBE Template)		7	N/A	<b>Not Compatible with 1XX</b>
Index Derivatives (MDG SBE Template)		7	N/A	<b>Not Compatible with 1XX</b>
Financial Derivatives (MDG SBE Template)		7	N/A	<b>Not Compatible with 1XX</b>
Commodities (MDG SBE Template)		7	N/A	<b>Not Compatible with 1XX</b>
Block (OEG and MDG SBE Template)		110	110	1XX

### 2.2 IMPLEMENTATION POLICY FOR DERIVATIVES

The Implementation Strategy for Derivatives must comply with the two following constraints:

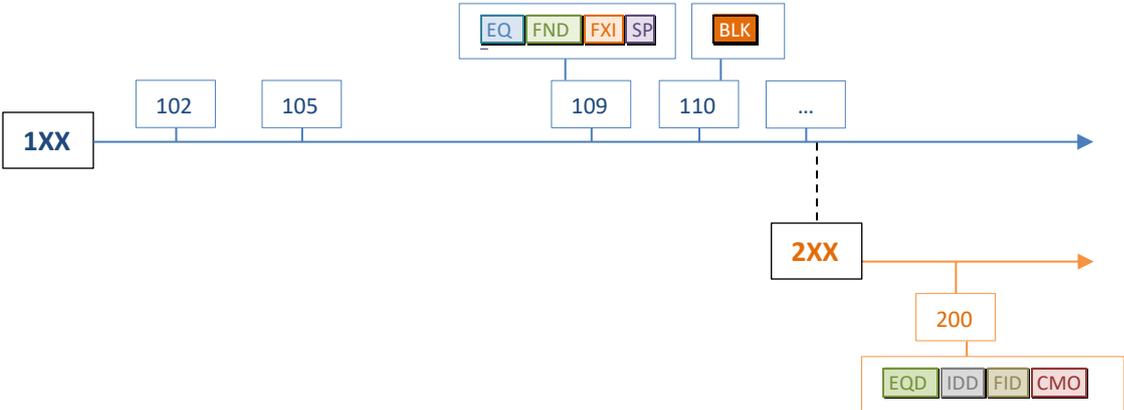
- The Version with which Derivatives will Go-Live on Optiq must be compatible with the 1XX Versions.  
**Full compatibility of the version used for Go-Live is guaranteed:** any client will be able to use the SBE Version 2XX Derivatives will go-live with on Market Data feed from the Cash Markets (which is using SBE 1XX versions) and use an SBE Version 2XX to communicate with Cash Segments using 1XX Versions on order entry. Client will be able to benefit as per the migration from the single API.
- **Cash Segments will be technically upgraded post Go-Live**

The SBE versioning policy for Derivatives must obey specific rules in line with H2 2019 implementation plan. This will allow to deliver the (1) compatibility of all SBE versions for the migration of Derivatives markets to Optiq, (2) reduce a possible impact to the versions already in production and (3) avoid disruption of client testing period and development timeline.

**2.3 CREATION OF THE 2XX SBE VERSIONS**

With the publication of the MDG Specifications and MDG SBE template for the opening of the Test Period in EUA on 30 April, the SBE version used for Derivatives Market Optiq segments is 200.

The following chart describes how the 2XX branch has been created. Official Euronext SBE Versions are shown with their explicit number.



The 2XX SBE versions branch was initiated based on the most advanced state of the 1XX branch. As of May 2019. As such, some changes of the 1XX branch that are not yet officially published will be included in the 2XX SBE Templates.

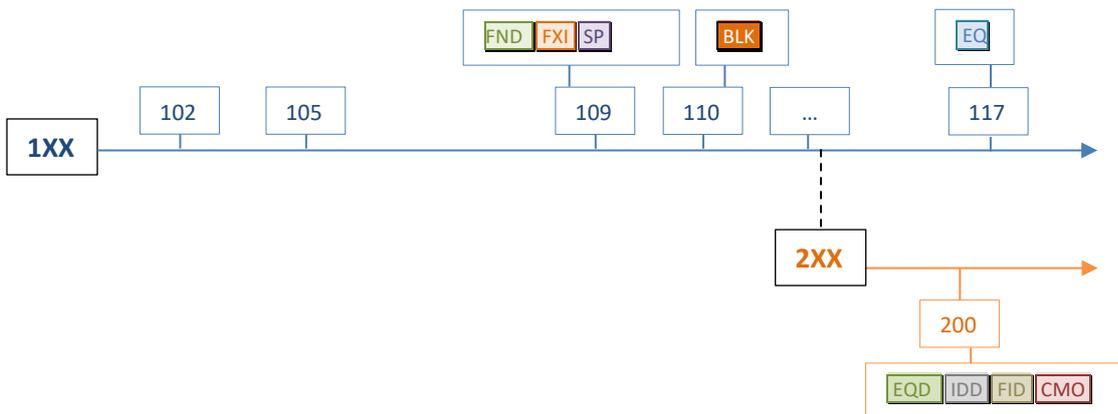
This will appear in the SBE template through the use of “Since Version” flags on versions that are greater than 110 and up to 116. **Clients should consider version 116 as the latest up-to-date version on the 1XX branch – even if has not been published yet.**

The section 2.6 of this notice explains how Euronext will manage a potential case of delivery of new (starting at 117) SBE Versions on the 1XX branch before the migration of the Derivative markets on Optiq.

**2.4 HOW WILL THE 2XX VERSIONS ENSURE THAT EXISTING SEGMENTS WILL NOT BE IMPACTED?**

Up until the Go-Live of Optiq on Derivatives Markets, all existing Segments will remain on the 1XX branch. Any required change before the Go-Live of Optiq Phase 3 will be made in Versions 1XX.

In the example below, the Equities Segment requires to be upgraded to a Version 117:

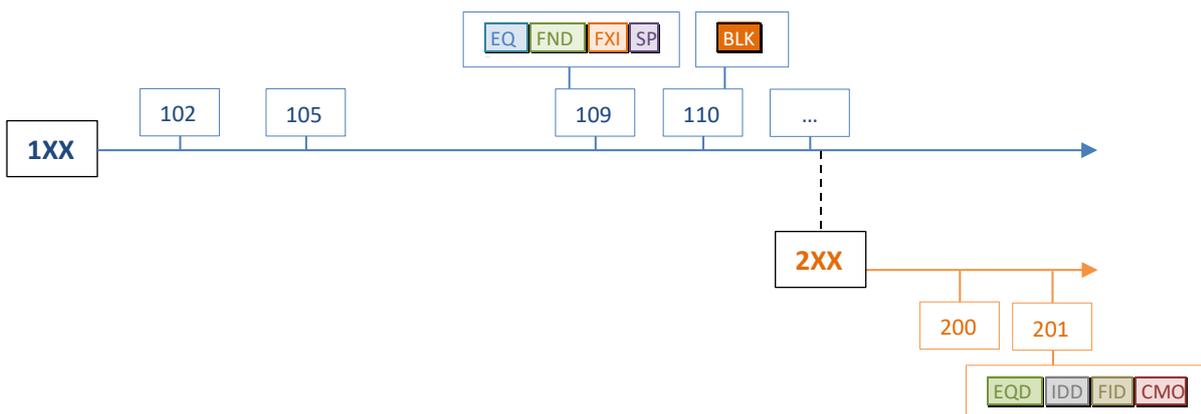


## 2.5 HOW WILL THE 2XX VERSIONS ENSURE COMPATIBILITY WITH 1XX AT THE GO-LIVE OF OPTIQ PHASE 3?

Any SBE 2XX version that will be published during the lifetime of the Optiq programme and up until Go-Live of Optiq Phase 3 will carry changes made on the 1XX versions – if any. As such, there are two potential scenarios, presented below.

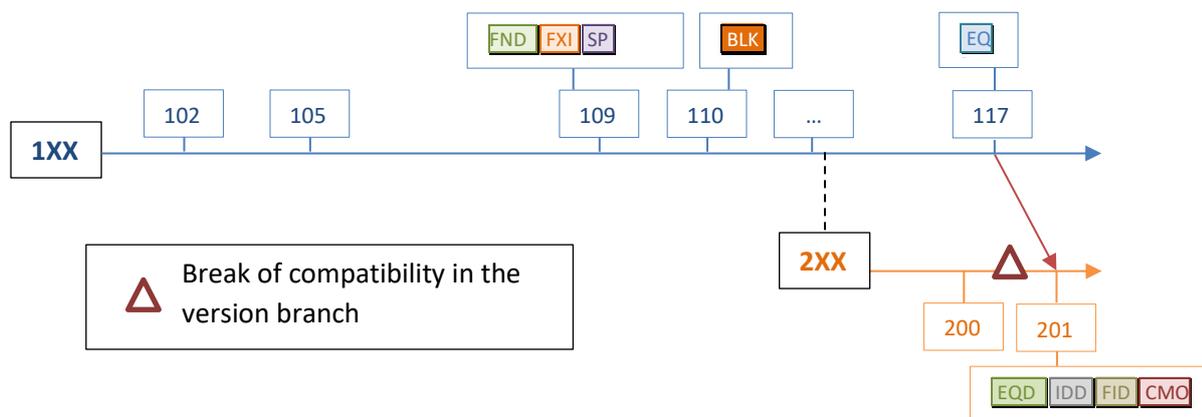
*Note : Hypothesis of the two examples: Derivatives are upgraded to version 201 with the full scope delivery in Q3 2019 in the test environment.*

- **Scenario 1:** No SBE version upgrade is made on the 1XX branch for Segments already on Optiq, i.e. Equities, Funds, Fixed Income, Structured Products and Block.



SBE Versions 200 and 201 are compatible. SBE version 201 carries all the changes in relation with the delivery. SBE Version 201 is compatible with 1XX.

- **Scenario 2:** An SBE version upgrade is made on the 1XX branch for Segments already on Optiq. Equities is upgraded to SBE version 117 in relation with a new project.



- SBE version 201 carries changes of both the Derivatives delivery and Cash Markets.
- SBE version 117 is compatible with 1XX versions. However, version 117 was made after the creation of the 2XX branch, and is relying on version 116.

➔ This means both version 200 and version 117 rely on 116, but 200 does not include 117 changes, while 200 > 117. Therefore, version 200 is no longer compatible with versions 1XX anymore and clients must upgrade to version 201 on Derivatives.

The version 201, carrying changes from 116, 117 and 200, is compatible with 1XX but not with 200.

➔ Through this process, Euronext ensures that

- the latest version 2XX is always compatible with 1XX versions. At Go-Live, the latest 2XX versions that will be applicable to Production will be compatible with 1XX Versions already live.
- The 1XX versions will not be upgraded after the migration of Derivatives Markets, and all Optiq Segments will migrate to 2XX Versions.

## 2.6 HOW TO MANAGE SUCCESSIVE VERSIONS OF THE 2XX BRANCH BEFORE THE GO-LIVE OF OPTIQ PHASE 3?

As demonstrated in Scenario 2, intermediary 2XX Versions published in the course of H2 2019 may become obsolete if existing Segments in Production are upgraded on an SBE version greater than 116.

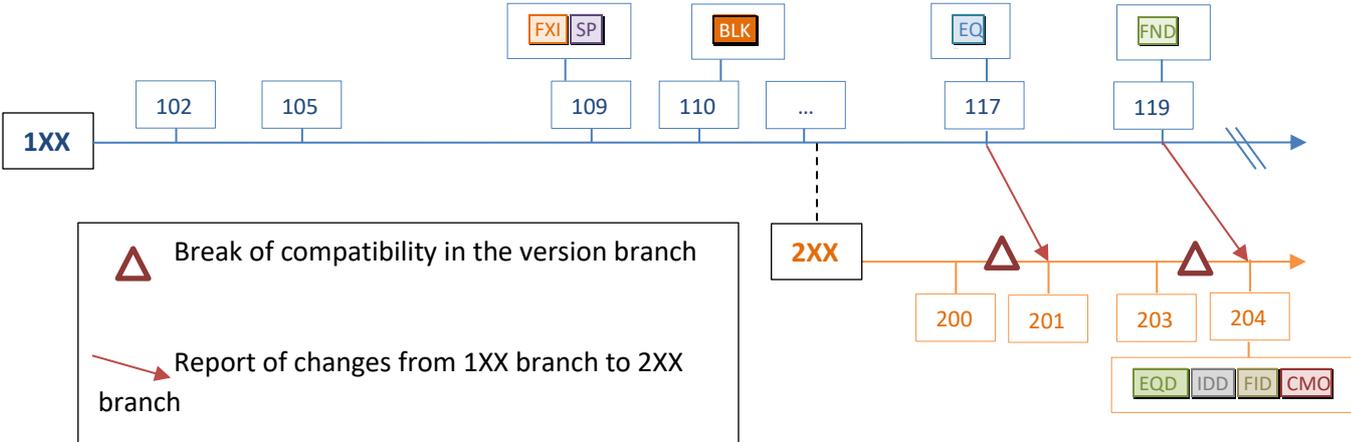
It is strongly recommended that clients upgrade their systems systematically to connect to the Derivatives Markets. On the cash markets, it is strongly recommended to clients to anticipate the upgrade of Cash segments to the 2XX branch based on the latest version delivered for Derivatives Go-Live.

In the context of the Optiq programme, Euronext will communicate about each update of SBE template to indicate if the published version is compatible with the previous 2XX Version, via an Optiq Notice.

## 2.7 HOW WILL SBE BE MANAGED AFTER THE MIGRATION OF DERIVATIVES MARKETS TO OPTIQ?

As previously shown, Backward-Compatibility of the latest 2XX Version is guaranteed with the latest 1XX Version that will be applicable in Production when Derivatives Markets migrate to Optiq.

The Following picture is an example with arbitrary values of a picture of Euronext Markets at the Go-Live of Optiq Phase 3. As an example, in the following graph, the latest 1XX Version at Go-Live is 119, the latest 2XX version is 204:



In this example, on Derivatives Segments, client must Go-Live with version 204 on EQD, IDD, FID and CMO Segments:

- The 204 Version is Compatible with the 119 Version.
- Clients can choose either to connect to all segments using the 204 SBE Version or maintain multiple SBE Versions.

**After the migration of Euronext Derivatives Markets to Optiq, the 1XX branch of Versions will no longer be upgraded.** From this time onwards, any upgrade of the Cash Markets SBE versions will use the 2XX versions, ensuring full compatibility of all Optiq segments.

## APPENDIX A: HIGH LEVEL SCENARIO WHERE ONLY ONE 1XX BRANCH IS USED

The two following elements must be taken into account to technically describe the rationale of using a new branch. The scenario hereafter described is built solely for the intention of showing the impact on client with such an approach.

- Cash projects may be delivered to clients before 25 November – whether they are driven by business or regulatory needs. They may require SBE API upgrades before the Derivatives markets’ migration.
- Euronext guarantees a test period in H2 2019 on Derivatives Markets to prepare for the migration to Optiq.

In this example, based on the current set-up, Euronext would use SBE version 111 for the implementation of Derivatives Markets on Optiq. The following set-up would therefore apply:

Optiq Segment		Scenario where Euronext would use 111 version for Derivatives: hypothetical picture May 2019	Earliest Supported SBE template	Compatibility
Equities (OEG and MDG SBE Template)		109	102	1XX
Funds (OEG and MDG SBE Template)		109	102	1XX
Fixed Income (OEG and MDG SBE Template)		109	102	1XX
Warrants and Certificates (OEG and MDG SBE Template)		109	102	1XX
Equity Derivatives (MDG SBE Template)		111	N/A	1XX
Index Derivatives (MDG SBE Template)		111	N/A	1XX
Financial Derivatives (MDG SBE Template)		111	N/A	1XX
Commodities (MDG SBE Template)		111	N/A	1XX
Block (OEG and MDG SBE Template)		110	110	1XX

However, Derivatives are due to be delivered in November.

If an event occurs in the course of H2 2019 to be delivered in September 2019 and impacting the Equities segment, Euronext would require using an SBE version greater than 111:

Optiq Segment		Scenario where Euronext would use 111 version for Derivatives: hypothetical picture September with a change on Cash Markets 2019	Earliest Supported SBE template	Compatibility
Equities (OEG and MDG SBE Template)		<b>112</b>	102	1XX
Funds (OEG and MDG SBE Template)		109	102	1XX
Fixed Income (OEG and MDG SBE Template)		109	102	1XX
Warrants and Certificates (OEG and MDG SBE Template)		109	102	1XX
Equity Derivatives (MDG SBE Template)		111	N/A	1XX
Index Derivatives (MDG SBE Template)		111	N/A	1XX
Financial Derivatives (MDG SBE Template)		111	N/A	1XX
Commodities (MDG SBE Template)		111	N/A	1XX
Block (OEG and MDG SBE Template)		110	110	1XX

In such a scenario, Euronext would:

- Require Clients on the Cash Equities Segment to upgrade to the SBE version that includes derivatives changes much earlier than at the Go-Live of Optiq for Derivatives
- Disrupt the guarantee of the testing period and enforce changes on clients that they do not require and may be structural
- Disrupt client development timeline
- Put at risk market stability
- Put the Derivatives Market Migration at risk

**EURONEXT WILL NOT ADOPT A POLICY THAT WOULD PUT CLIENT DEVELOPMENT AND CURRENT PRODUCTION AND INFRASTRUCTURE AT RISK – NOR DISRUPT THE DERIVATIVES MIGRATION TESTING PERIOD.**

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## APPENDIX B: REVISION HISTORY

Version	Change Description
1.0	Initial version

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## DOCUMENT HISTORY

REVISION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
1.0	May 2019	Euronext	Initial version