

#### Document title

# **EURONEXT CASH MARKETS – OPTIQ® DETAILED INFORMATION ON SECOND DELIVERY IN V-EUA**

#### Document type or subject

Optiq® Detailed Information on Second Delivery in V-EUA

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#### **PREFACE**

#### **PURPOSE**

This document outlines important details regarding the second software release for Phase 2 of the Euronext Optiq® migration: full trading chain, including Order Entry Gateway, Matching Engine and Market Data Gateway for Cash markets.

This document is a supporting document to the interface technical specifications.

#### **ASSOCIATED DOCUMENTS**

The following list identifies the associated documents, which either should be read in conjunction with this document, or which provide other relevant information for the user:

- Euronext Cash Markets Optiq OEG Client Specifications SBE Interface
- Euronext Cash Markets Optiq OEG Client Specifications FIX 5.0 Interface
- Euronext Cash Markets Optiq Kinematics Specifications
- Euronext Cash Markets Optiq CCG to OEG Changes Highlight
- Euronext Cash Markets Optiq & TCS Error List
- Euronext Cash and Derivatives Markets Optiq File Specification
- Euronext Cash Markets Optiq MDG Client Specifications
- Euronext Cash Markets Change Highlights Optiq MDG Phase 1 to 2
- Optiq Technical Note SBE

<u>Clients are advised to also refer to the Euronext Rules and Regulations documents for more details.</u>

For the latest version of documentation please visit <a href="http://www.euronext.com/optiq">http://www.euronext.com/optiq</a>

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#### **DOCUMENT & REVISION HISTORY**

For the details of this and previous updates of this document please refer to the <u>Appendix</u> at the end of this document.

Version	Change Description
1.2.0	Update for the second software release of Optiq trading chain for the Cash markets

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#### 1. INTRODUCTION

Euronext announced the launch of its new generation technology program in May 2016, which will deliver improved customer experience through the migration from its current technology platform Euronext UTP to its new leading edge platform: Optiq®.

This document describes the update of functionalities being made with the second software delivery, and available in virtual EUA (V-EUA) as of 11 December 2017<sup>1</sup>.

Further software releases with customer facing functionalities are due to be delivered in Q1 2018.

#### 1.1 GLOSSARY

This section provides a list of some terms & abbreviations commonly used in this document. Please note that some of these terms are described in more details in the dedicated sections within this document or in the associated Optiq specifications documents.

- Order Entry Gateway (OEG): is the software that manages the access for exchanges' clients, and acts as the private interface between the clients and the Optiq matching engine.
- Market Data Gateway (MDG): is the software that provides high-speed, real-time market data (public messages) for the Euronext markets.
- Optiq Segment: defines a universe of instruments habitually sharing common trading properties. An OPTIQ Segment can contain one or several asset classes. An OPTIQ Segment access is setup through a Logical Access.
- <u>Partition</u>: is a technical subdivision of an Optiq Segment. An Optiq Segment may be comprised of at least one or several partitions, physically independent one from another, but connected to each other within the context of the Optiq Segment. Instruments may move from one partition to another within an OPTIQ segment.
- <u>Logical Access</u>: is an OEG (Order Entry Gateway) entry point, setup for clients to connect to a single OPTIQ Segment, containing the technical configuration for the client's connectivity. Multiple logical accesses can share the same SFTI line.
- <u>OE Session</u>: the individual physical connection, to a single Partition. A single Logical access may have as many OE sessions as there are partitions in the Optiq segment.
- ♦ <u>Disaster Recovery (DR):</u> A Euronext Disaster Recovery event occurs when Euronext switches client systems processing from the Euronext production environment to the Euronext DR environment. The DR environment provides redundant standby systems to be used upon the failure of the Euronext production environment.

<sup>&</sup>lt;sup>1</sup> V-EUA opened according to the trading pattern defined in section 3.5. However, in case of technical issue, the service level will guarantee a maximum opening time at 10 a.m. CET.

#### 2. OEG CONNECTIVITY

#### 2.1 CONNECTIVITY TESTING

As announced in the Info Flash on 8 August 2017, connectivity Telnet testing is available in EUA. If required, clients may continue performing Telnet tests in v-EUA after the two deliveries of Optiq Phase 2. Customers wishing to test the new order entry (OE) software need to obtain OE connectivity details. V-EUA access information (login and port) is in progress of being provided to the Member Connectivity Administrators (MCA) of Euronext's clients by the Customer Access Services (CAS) team.

#### **Customer Access Services**

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#### 3. OVERVIEW OF SECOND OEG DELIVERY

Below please find an overview of the updated set of functionalities, made available in V-EUA as of 11 December 2017 with the second software delivery.

Functionalities not explicitly identified as available in this document may be present in the system, however are still in progress of delivery. Use of such functionalities at this time may result in unexpected behaviour. Future version of the release notes for coming deliveries will identify when these functionalities are ready for use.



<u>Important note</u>: This document provides a high level overview of the second delivery for Optiq. For full details of functionalities, message structures and behaviour, clients are advised to review the Optiq OEG & MDG specification documents.

#### 3.1 OEG LOGICAL ACCESS: EQUITIES, FUNDS, WARRANTS AND CERTIFICATE SEGMENTS

Three segments: Equities, Funds, Warrants and Certificates, are available for testing with this software release. These segments will be setup with two (2) partitions for the Equities segment, and one partition each for Warrants and Certificates, & Funds segments. Remaining two (2) partitions for the Equities segment and the Bonds segment will be made available for testing at a later stage.

Partitions available with second software release:

Optiq Segment Name	<b>Partition ID</b>	IP of Individual Partition
Equities	10	212.197.223.23
	11	212.197.223.24
Funds (ETFs)	20	212.197.223.27
Warrants and Certificates	40	212.197.223.28

#### 3.2 REFERENTIAL DATA

The instruments which can be used for testing in V-EUA with this release are the population of the trading groups listed below for each segment. As for Phase 1, the referential that is available for testing will be made available via the Cash Standing Data files on the Euronext File Service (EFS).

The scope of the trading groups, in terms of total number and content, will evolve with future releases. The Cash Standing Data files will also be updated accordingly.

As with the first software release, and until later software delivery, the instruments made available for testing will only use EMM values of 1 [Cash and Derivative Central Order Book (COB)].

# 3.2.1 Equities Optiq Segment

Trading Group Code	Trading Group Name	Market of the Trading Group	Trading Pattern ID	Notes
16	Equities	Paris	60	Continuous
63	Lending/ Borrowing	Paris	52	Quintuple Uncrossing
A0	Equities BEL20	Brussels	60	Continuous
F1	Equities CAC40 - Group 1	Paris	60	Continuous
10	Equities AEX	Amsterdam	60	Continuous
Р0	Equities PSI20	Lisbon	60	Continuous
Т6	DUMMY GROUP 3	Paris	1005	Call Only
VG²	FUNDS – VPU <sup>3</sup>	Brussels	1009	Call Only

#### 3.2.2 Funds Optiq Segment

Trading Group Code	Trading Group Name	Market of the Trading Group	Trading Pattern ID	Notes
08	ETFs FR Equity SR = 2%	Paris	13	Continuous
G2	ETFs FR Fixed Income - Commo - SR = 2%	Paris	13	Continuous
S1	Investment funds	Lisbon	5	Double Auction

# 3.2.3 Warrants and Certificates Optiq Segment

Trading Group Code	Trading Group Name	Market of the Trading Group	Trading Pattern ID	Notes
N7	STRUCT PDTS EURO- FOR CCY - CT	Amsterdam	902	Continuous / Quote Driven
МВ	Exotic certificates – ABN AMRO	Amsterdam	902	Continuous / Quote Driven
HD	Certificates – Continuous	Paris	902	Continuous / Order Driven

#### 3.3 OEG ADMINISTRATIVE MESSAGES

Find below the list of administration messages that are in scope of this software release in V-EUA on all available Optiq segments.

SBE Messages	FIX Messages	
Logon (100)	Logon (A)	
■ Logon Ack (101)		
■ Logon Reject (102)	Reject (3)	
■ Logout (103)	Logout (5)	
<ul><li>HeartBeat (106)</li></ul>	■ HeartBeat (0)	
<ul><li>TestRequest (107)</li></ul>	■ TestRequest (1)	
	<ul><li>ResendRequest (2)</li></ul>	
	<ul><li>SequenceReset (4)</li></ul>	

<sup>&</sup>lt;sup>2</sup> The full Euronext Expert Market functionality will be made available in a future software delivery. Until such date trades done within trading group VG will not be populated with the counterparty ID.

#### 3.4 OEG APLICATION MESSAGES

#### 3.4.1 Generally Available Messages

Find below the list of application messages that are part of this software release in V-EUA on all available Optiq segments.

SBE Messages	FIX Messages
New Order (01)	<ul><li>NewOrderSingle (D)</li></ul>
Ack (03)	<ul><li>ExecutionReport (8)</li></ul>
Fill (04)	
Kill (05)	
Cancel Replace (06)	<ul><li>OrderCancelReplaceRequest (G)</li></ul>
Reject (07)	OrderCancelReject (9)
Cancel Request (12)	<ul><li>OrderCancelRequest (F)</li></ul>

The functionalities below are available:

- 1. Order types: Limit, Market, Market To Limit, Cross
- 2. Validity types: Day, IOC, FOK, GTC, GTD, VFU (VFA) / VFC
- 3. Best of Book service<sup>1</sup>
- 4. Mass Cancel service<sup>1</sup>
- 5. Client order id field check for duplicates

The functionalities below are available only under certain conditions:

- 1. Start of Day & Order Elimination
- 2. Order types: Stop & Iceberg
- 3. ResendRequest (2) and SequenceReset (4) for FIX (in target)

Conditions for the functionalities listed above are the following:

- Elimination of orders by Corporate Actions will not be available until delivery of the next software release
- OEG Throttling is not in scope of this delivery, however network throttling mechanism will be active

#### 3.4.2 Important Notes on FIX Protocol

With the delivery of the second software release a number of structurally important changes occur to the FIX protocol and are included in the updated FIX specifications. Additionally the updated FIX specifications contain updates that are to be implemented in a future delivery. Section below highlights main areas of such updates.

#### 3.4.2.1 Structurally important modifications of FIX messages

The updated FIX protocol specifications contain multiple various modifications that are summarized and described in detail in the document. The list below provides only a sub-set of the changes, to highlight those changes that are structurally different between the implementation of FIX messages provided with the first software delivery.

The following field Length changes have been made:

<sup>&</sup>lt;sup>1</sup> Functionalities not available in the first software release

- Account (tag 1): from '14' to '12';
- AckQualifier (tag 21014): from '15' to '3';
- DarkExecutionInstruction (tag 20052): from '8' to '9';
- MassStatusReqID (tag 1369): from '30' to '20';
- PostingAction (tag 7443): from '19' to '17'

#### The following value modifications have been made:

- EMM (tag 20020): value 'Not Applicable' changed from '254' to '99';
- LastCapacity (tag 29): Values replaced as following:
  - '1 = Dealing on own account (DEAL)' replaced by '7 = Dealing on own account (DEAL)'
  - '2 = Matched principal (MTCH)' replaced by '8 = Matched principal (MTCH)'
  - '3 = Any other capacity (AOTC)' replaced by '9 = Any other capacity (AOTC)';
- MassStatusReqID (tag 1369): changed from 'User-defined value' to 'From -2^63 to 2^63-1';
- MsgSeqNum (tag 34): Possible value zero (0) removed
- NoInstrumentScopes (tag 1656): changed from 'From 1 to 100' to 'If provided, always set to 1';
- PostingAction (tag 7443): removed value / position '0 = Field Actively Used'

#### The following message structure changes have been made:

- Conditional field *OrigSendingTime* (tag 122) added in **Message Header**
- Repeating groups Parties and NestedParties removed in MassQuoteAck (b)
- Field AccountCode (tag 6399) removed from message OrderCancelReplaceRequest (G)
- Field ClOrdID (tag 11) removed in messages: MassQuote (i), OrderMassStatusRequest (AF), and RequestAckMessage (Uy)
- Field TransactTime (tag 60) removed in messages: AskForQuote (AL), LiquidityProviderCommand (UZ), MassQuote (i), MassQuoteAck (b), OrderCancelReject (9), OrderMassStatusRequest (AF), OwnershipRequest (U18), PriceInput (UI), and RequestAckMessage (Uy)

#### 3.4.2.2 Changes in the Specifications that will become available with a later delivery

The following changes will be applicable with a future delivery, but are already present in the FIX message specifications. For the functionalities already made available in V-EUA, and until these changes or functionalities are identified in scope of a future delivery, clients should continue using the format and values identified in the previous version of the FIX message specifications.

- 1. An optional repeating group *OrderAttributeGrp* added in the messages listed below, in order to allow clients to populate values AGGR and PNAL. Messages affected are:
  - OrderCancelRequest (F)
  - OwnershipRequest (U18)
  - ◆ PriceInput (UI)
  - LiquidityProviderCommand (UZ)
  - OrderMassStatusRequest (AF)
  - OrderMassCancelRequest (q)
  - UserNotification (CB)
- 2. Presence of the field NextExpectedMsgSeqNum (tag 789) from Conditional to Mandatory in Logon (A)
- 3. Update of values as following:
  - Value '19 = NewSeqNo(36) too low' added to field SessionRejectReason (tag 373) for use in message Reject (3)

- Value 'D' (Proprietary / Custom Code) added to the field PartyIDSource (tag 447) for use in message UserNotification (CB)
- 4. Newly added messages for use in cases of recovery, and associated values were added in field *MsgType* (tag 35)
  - InstrumentSynchronisationList (U50)
  - SynchronisationTime (U51)

#### 3.4.3 Warrants and Certificates Segment Specific Messages

Find below the list of application messages that are part of this software release in V-EUA that are available for the Warrants and Certificates segment:

SBE Messages	FIX Messages	
<ul><li>Quotes (08)</li></ul>	<ul><li>MassQuote (i)</li></ul>	
<ul><li>Quote Ack (09)</li></ul>	<ul><li>MassQuoteAck (b)</li></ul>	
<ul><li>Liquidity Provider Command (32)</li></ul>	<ul><li>LiquidityProviderCommand (UZ)</li></ul>	
<ul><li>Ask For Quote (33)</li></ul>	<ul><li>AskForQuote (UL)</li></ul>	
<ul><li>Request For Execution (34)</li></ul>	<ul><li>RequestForExectuion (UM)</li></ul>	

The functionality below is available:

1. Submission and management of functionalities under the Hybrid LP Quote driven market, and its interaction with Orders

#### NOTE:

LP Quotes will be entered into the market by CTSG on request, in order to test functionalities for the Warrants and Certificates LP Quote driven instruments.

For testing of the LP Functionalities (e.g. AFQ, RFE, LP Command) the client wishing to perform these tests should contact CTSG to be setup as the LP managing the instruments.

#### 3.5 TRADING PATTERNS

All instruments within the scope of trading groups listed for this delivery and identified in the table of section "3.2 Referential Data" will be following the trading pattern assigned to it. The details of each trading pattern are made available in the Timetable file made available on EFS, and is also provided in the Appendix at the end of this document.

**NOTE**: The Time for each Phase is indicated in <u>UTC</u>.

#### 3.6 MARKET DATA GATEWAY (MDG)

For all the functionalities and messages associated to functionalities made available with this release identified for Order entry, all existing MDG real-time messages will be provided as specified in the Optiq MDG client Specifications – **v2.0.0**, including the previously unavailable messages Standing data (1007) and Full Trade information (1004).

TCS messages are not in scope of this delivery.

#### 3.7 EURONEXT FILE SERVICES (EFS)

Files available on the V-EUA Euronext Files Services are the following:

- OEG SBE template File
- MDG SBE template File
- Cash Standing Data File
- Cash Tick Size Referential File
- Repo Settlement Price File
- Timetable File

#### 3.8 POSSIBLE ACTIONS BY OPTIQ SUPPORT DESK

Below is the list of actions the Optiq support desk can perform on client's request:

- Reopen/Suspend Instrument
- Halt/Resume Trading Group
- Update Group TimeTable
- Create and Cancel Orders
- Create and Cancel LP Quotes

# 4. LIST OF KNOWN DEFECTS

#### **Impacting Equities segment:**

- For the Best of Book service there might be:
  - inconsistent order quantities in the OEG messages when Iceberg orders are involved in Continuous trading phase
  - inconsistent MDG messages sequencing when Stop orders are involved at Uncrossing
  - missing MDG Market updates (Limits) when Stop orders are triggered
  - missing MDG Market updates (BBO) when prices are outside the static collars

#### **Impacting Warrants and Certificates segment:**

- On change of last adjusted closing price the stop-on-quote orders are removed from the book
- During PAKO period, Iceberg orders are not allowed. Clients should not submit Iceberg orders during such period.

#### Impacting all Segments made available with this delivery (FIX protocol):

- Inconsistency of processing incorrect sequence of values in MsgSeqNum & NextExpectedSeqNum field in ResendRequest (2) & SequenceReset (4) messages sent by client to an OEG. Clients are advised to use the correct sequence of messages until this defect is corrected.
- In the ExecutionReport (8) message fields below are either not provided or populated with default values:

FIX Field	Case	Value populated
ExecID (14)	Ack	Populated with 'NA'
	Fill	Correctly provided
	Kill	Populated with 'NA'
	Reject	Populated with 'NA'
	Trade Bust	Correctly provided
CumQty (1138)	Ack	Correctly provided
	Fill	Correctly provided
	Kill	Populated with '-1'
	Reject	Populated with '-1'
	Trade Bust	Populated with '-1'
LeavesQty (1)	Ack	Correctly provided
	Fill	Correctly provided
	Kill	Populated with '0'
	Reject	Populated with '0'
	Trade Bust	Populated with '-1'
DisplayQty (151)	Ack	Populated with '18446744073709500000' (max value)
	Fill	Populated with '18446744073709500000' (max value)
	Kill	Populated with '18446744073709500000' (max value)
	Reject	Populated with '18446744073709500000' (max value)

# APPENDIX A: DETAILS OF THE AVAILABLE TRADING PATTERNS / TIMETABLES

#### **TRADING PATTERN: 5**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Opening	No qualifier	06:15
Core Auction	Uncrossing	4	Standard	No qualifier	10:30
Core Trading at last	Continuous	5	Standard	Trading At Last	10:30
Closing call	Call	3	Closing	No qualifier	11:00
Closing Auction	Uncrossing	4	Closing	No qualifier	15:30
Late trading at last	Continuous	5	Closing	Trading At Last	15:30
Core call	Call	3	Closing	No qualifier	16:00
Late Monitoring	Closed	2	Closing	No qualifier	16:40
Closed	Inaccessible	1	Closing	No qualifier	17:00

# **TRADING PATTERN: 13**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Standard	No qualifier	06:15
Core Auction	Uncrossing	4	Standard	No qualifier	08:05
Core Continuous	Continuous	5	Standard	No qualifier	08:05
Closing call	Call	3	Closing	No qualifier	16:30
Closing Auction	Uncrossing	4	Closing	No qualifier	16:35
Late Monitoring	Closed	2	Closing	No qualifier	16:35
Closed	Inaccessible	1	Closing	No qualifier	17:30

#### **TRADING PATTERN: 19**

UTP Trading Phase	Optiq Book State	е	Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Opening	No qualifier	06:15
Core Auction	Uncrossing	4	Standard	No qualifier	11:00
Core Trading at last	Continuous	5	Standard	Trading At Last	11:00
Closing call	Call	3	Closing	No qualifier	11:30
Closing Auction	Uncrossing	4	Closing	No qualifier	16:00
Late Trading at last	Continuous	5	Closing	Trading At Last	16:00
Core call	Call	3	Closing	No qualifier	16:30
Late Monitoring	Closed	2	Closing	No qualifier	16:40
Closed	Inaccessible	1	Closing	No qualifier	17:30

#### **TRADING PATTERN: 51**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Standard	No qualifier	06:15
Core Auction	Continuous Uncrossing	7	Standard	No qualifier	07:00
Core Continuous	Continuous	5	Standard	No qualifier	07:00
Late Monitoring	Closed	2	Closing	No qualifier	17:30
Closed	Inaccessible	1	Closing	No qualifier	17:40

#### **TRADING PATTERN: 52**

UTP Trading Phase	Optiq Book State		nase Optiq Book State Trading Period		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45		
Core Call	Call	3	Opening	No qualifier	06:15		
Core Auction	Uncrossing	4	Opening	No qualifier	09:30		
Core call	Call	3	Standard	No qualifier	09:30		
Core Auction	Uncrossing	4	Standard	No qualifier	10:00		
Core call	Call	3	Standard	No qualifier	10:00		
Core Auction	Uncrossing	4	Standard	No qualifier	10:30		
Core call	Call	3	Standard	No qualifier	10:30		

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Core Auction	Uncrossing	4	Standard	No qualifier	13:30
Closing call	Call	3	Closing	No qualifier	13:30
Closing Auction	Uncrossing	4	Closing	No qualifier	15:00
Core call	Call	3	Closing	No qualifier	15:00
Late Monitoring	Closed	2	Closing	No qualifier	16:40
Closed	Inaccessible	1	Closing	No qualifier	17:00

#### **TRADING PATTERN: 60**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Standard	No qualifier	06:15
Core Auction	Uncrossing	4	Standard	Random Uncrossing	08:00
Core Continuous	Continuous	5	Standard	No qualifier	08:00
Closing Call	Call	3	Closing	No qualifier	16:30
Closing Auction	Uncrossing	4	Closing	Random Uncrossing	16:35
Trading at last	Continuous	5	Closing	Trading At Last	16:35
Late Monitoring	Closed	2	Closing	No qualifier	16:40
Closed	Inaccessible	1	Closing	No qualifier	17:00

# **TRADING PATTERN: 902**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Standard	No qualifier	06:15
Core Auction	Continuous Uncrossing	7	Standard	No qualifier	08:05
Core Continuous	Continuous	5	Standard	No qualifier	08:05
Late Monitoring	Closed	2	Closing	No qualifier	18:50
Closed	Inaccessible	1	Closing	No qualifier	19:00

#### **TRADING PATTERN: 1005**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:30
Core Call	Call	3	Standard	No qualifier	05:35
Late Monitoring	Closed	2	Closing	No qualifier	16:40
Closed	Inaccessible	1	Closing	No qualifier	17:00

# **TRADING PATTERN: 1009**

UTP Trading Phase	Optiq Book State		Trading Period	Phase Qualifier	Time (in UTC)
Early Monitoring	Closed	2	Opening	No qualifier	05:45
Core Call	Call	3	Standard	No qualifier	06:15
Late Monitoring	Closed	2	Closing	No qualifier	16:40
Closed	Inaccessible	1	Closing	No qualifier	17:30

# **APPENDIX B: REVISION HISTORY**

# **SUMMARY OF CHANGES**

# **DOCUMENT HISTORY**

REVISION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
1.2.0	December 2017	Euronext	Update for the second software release of Optiq trading chain for the Cash markets
1.1.0	October 2017	Euronext	Clarification & bug fix delivery for the first software release
1.0.0	September 2017	Euronext (Optiq Analyst)	First release, for the first software delivery of Optiq trading chain for the Cash markets