S&P Capital IQ Real-Time Solutions

FeedOS™ Developer's Notice

ORION DERIVATIVES – Feed Migration from IDC to DMA

Reference n°: 20141120 – 18312 – 23138

Effective as of: **15 December 2014***

Action required from users: **MANDATORY ACTION**

S&P CAPITAL IQ
McGRAW HILL FINANCIAL

* For the actual day when the changes to your custom feed handler take effect, please contact your QuantFEED® project manager.

S&P Capital IQ Real-Time Solutions
FeedOS™ Developer's Notice: ORION DERIVATIVES – Feed Migration from IDC to DMA
Reference 20141120 – 18312 – 23138
November 24, 2014

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MIGRATION OF THE ORION DERIVATIVES MARKET DATA STREAM FROM IDC TO DMA

To reflect the changes caused by the migration of the ORION DERIVATIVES market data stream from IDC to DMA protocol, S&P Capital IQ Real-Time Solutions has decided to enhance the content of FeedOS.

This developer's notice contains late-breaking information about the implementation of this modification in your applications, which may not be included otherwise in the published documentation. The topics this notice covers include:

- 1. Update Summary
- 2. FeedOS Technical Implementation
- 3. Finding the Latest Information.

1. Update Summary

Table 1 Current update summary

Notice Reference	20141120 – 18312 – 23138
Exchanges	ORION DERIVATIVES
Concerned MICs	XHKF
Internal Source ID	54, 136, 139, 206, 215, 218
Effective Date	**2014-12-15**[*]
Impact	• Update of the Referential Tags • Update of the Quotation Tags • Update of the Quotation Context Tags • Addition of the Multi-session Kinematics • Update of the MBL Book Depth
Action required	**MANDATORY ACTION** - see sections: • 2.1.1. CFICode, • 2.2.2. TradingStatus • 2.4. Addition of the Multi-session Kinematics • 2.5. Changes to the MBL Book Depth.

2. FeedOS Technical Implementation

Effective Monday, **December 15[*] 2014,** S&P Capital IQ Real-Time Solutions enhances the referential, quotation and quotation context data, introduces multi-session kinematics and updates the MBL book depth to accommodate the new information disseminated on the ORION DERIVATIVES market data stream, as described below:

- 2.1. Changes to the Referential Data
- 2.2. Changes to the Quotation Data
- 2.3. Changes to the Quotation Context Data
- 2.4. Addition of the Multi-session Kinematics
- 2.5. Changes to the MBL Book Depth.

2.1. Changes to the Referential Data

S&P Capital IQ Real-Time Solutions **updates** the values of the referential tags below to accommodate the information disseminated on the ORION DERIVATIVES market data stream:

Table 2 Referential tags disseminating updated values on the ORION DERIVATIVES market data stream

Tag Name	Numeric ID	Type
`CFICode`	461	String

2.1.1. CFICode

The values of the referential tag **CFI Code** conveyed on the ORION DERIVATIVES market data stream are disseminated via FeedOS data stream in *Referential* to specify the standardized identification code of an instrument.

FeedOS implementation of the tag `CFICode` is described in the table below (existing values are in `black`, newly added values are in `green`):

Table 3 CFICode – technical implementation in FeedOS

Component	Value	Description
Tag Name	`CFICode`	FeedOS tag name.
Numeric ID	`461`	FeedOS unique ID disseminated on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`String`	String data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the standardized identification code of an instrument.

[*] This is the proposed day for the update of the standard version of the feed handler. For dedicated feed handlers, this date may differ. For the actual day when the changes to your custom feed handler take effect, please contact your FeedOS™ project manager.

Table 3 CFICode – technical implementation in FeedOS (Continued)

Component	Value	Description
Possible Values	FCECSO	Futures - Commodities - Extraction Resources - Cash - Standardized - Outright
	FFCCSO	Futures - Financial Futures - Currencies - Cash - Standardized - Outright
	FFDPSO	Futures - Financial Futures - Debt Instruments - Physical - Standardized - Outright
	FFICSO	Futures - Financial Futures - Indices - Cash - Standardized - Outright
	FFNCSO	Futures - Financial Futures - Interest Rates - Cash - Standardized - Outright
	FFSCSM	Futures - Financial Futures - Stock Equities - Cash - Standardized - Others
	~~FXXXXX~~	Futures
	~~MRXXXX~~	Other - Referential Instruments
	OCASCS	Options - Call Options - American - Stock Equities - Cash - Standardized
	OCEICS	Options - Call Options - European - Indices - Cash - Standardized
	~~OCXXXX~~	Options - Call Options
	OPASCS	Options - Put Options - American - Stock Equities - Cash - Standardized
	OPEICS	Options - Put Options - European - Indices - Cash - Standardized
	~~OPXXXX~~	Options - Put Options
	~~OXXXXX~~	Options
	SOXXXX	Structured Products - Structured Products without Capital Protection
	SWSXXX	Structured Products - Structured Products with Capital Protection - Stock-Equities
	SXXXXX	Structured Products

The list below shows the possible combinations of `FOSMarketIds`, `SecurityTypes` and `CFICodes`, before and after the migration day:

```
BEFORE 2014-12-15                   AFTER 2014-12-15
{ XHKF FUT  FXXXXX }                { XHKF FUT  FCECSO }
{ XHKF MLEG MRXXXX }                { XHKF FUT  FFCCSO }
{ XHKF OPT  OCXXXX }                { XHKF FUT  FFDPSO }
{ XHKF OPT  OPXXXX }                { XHKF FUT  FFICSO }
{ XHKF OPT  OXXXXX }                { XHKF FUT  FFNCSO }
                                    { XHKF FUT  FFSCSM }
                                    { XHKF MLEG SOXXXX }
                                    { XHKF MLEG SWSXXX }
                                    { XHKF MLEG SXXXXX }
                                    { XHKF OPT  OCASCS }
                                    { XHKF OPT  OCEICS }
                                    { XHKF OPT  OPASCS }
                                    { XHKF OPT  OPEICS }
```

Referential Data Sample

Below is an example of the referential tags implementation before and after the upgrade (tags disseminating updated values are in `blue`):

Referential Data before 2014-12-15

```
instr # 109/20739 = 228610307
    PriceCurrency               string{HKD}
    Symbol                      string{HSIV4}
    Description                 string{HANG SENG INDEX HSIV4}
    SecurityType                string{FUT}
    StdMaturity                 string{20141030}
    FOSMarketId                 XHKF
    Factor                      float64{50}
    ContractMultiplier          float64{1}
    CFICode                     string{FXXXXX}
    MarketSegmentID             string{Hang Seng Index Futures / Options}
    InternalCreationDate        Timestamp{2014-10-29 02:36:00:695}
    InternalModificationDate    Timestamp{2014-10-29 08:05:31:003}
    InternalEntitlementId       int32{1039}
    LocalCodeStr                string{HSIV4}
    ForeignFOSMarketId          XHKF
    ForeignMarketId             string{XHKF}
    PriceIncrement_static       float64{1}
    MaturityYear                uint16{2014}
    MaturityMonth               uint8{10}
    MaturityDay                 uint8{30}
    OperatingMIC                string{XHKF}
```

Referential Data after 2014-12-15

```
instr # 109/1617 = 228591185
    PriceCurrency               string{HKD}
    Symbol                      string{HSIH5}
    Description                 string{HANG SENG INDEX HSIH5}
    SecurityType                string{FUT}
    StdMaturity                 string{20150330}
    FOSMarketId                 XHKF
    Factor                      float64{50}
    ContractMultiplier          float64{1}
    CFICode                     string{FFICSO}
    MarketSegmentID             string{Hang Seng Index Futures / Options}
    InternalCreationDate        Timestamp{2014-11-03 15:17:53:926}
    InternalModificationDate    Timestamp{2014-11-04 16:01:12:593}
    InternalSourceId            uint16{73}
    InternalEntitlementId       int32{1039}
    LocalCodeStr                string{HSIH5}
    ForeignFOSMarketId          XHKF
    ForeignMarketId             string{XHKF}
    PriceIncrement_static       float64{1}
    MaturityYear                uint16{2015}
    MaturityMonth               uint8{3}
    MaturityDay                 uint8{30}
    OperatingMIC                string{XHKF}
```

2.2. Changes to the Quotation Data

S&P Capital IQ Real-Time Solutions **introduces** the quotation tags below to accommodate the information disseminated on the ORION DERIVATIVES market data stream:

Table 4 Quotation tags added on the ORION DERIVATIVES market data stream

Tag Name	Numeric ID	Type
`MARKET_HK_TradingState`	15010	String

S&P Capital IQ Real-Time Solutions **updates** the quotation tags below to accommodate the information disseminated on the ORION DERIVATIVES market data stream:

Table 5 Quotation tags disseminating updated values on the ORION DERIVATIVES market data stream

Tag Name	Numeric ID	Type
`TradingStatus`	9100	Enum

2.2.1. MARKET_HK_TradingState

The values of the quotation tag **MARKET_HK_TradingState** conveyed on the ORION DERIVATIVES market data stream are disseminated via FeedOS data stream in *Other Values* to indicate the original trading state value sent by the exchange:

- in the callback carrying the Level1 event `notif_TradeEventExt()`, for C++
- in the event handler `TradeEventExtEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifTradeEventExt`, for Java.

FeedOS implementation of the tag `MARKET_HK_TradingState` is described in the following table:

Table 6 MARKET_HK_TradingState – technical implementation in QuantFEED®

Component	Value	Description
Tag Name	`MARKET_HK_TradingState`	FeedOS tag name.
Numeric ID	`15010`	FeedOS unique ID disseminated on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`String`	Timestamp data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, indicating the original trading state value sent by the exchange.
Possible Values	`OPENALLOC`	Open Allocation Session – Markets with Pre-market Opening Period
	`CLOSE`	Market Closed – Markets not tradable in T+1 Session
	`OPEN`	Market Open – All markets
	`PREOPEN`	PreOpen Session – Markets with Pre-market Opening Period
	`PREOPENALLOC`	PreOpen Allocation Session – Markets with Pre-market Opening Period
	`PAUSE`	Market Pause – All markets
	`PRE_MKT_ACT`	PreMarket Activities – Markets without Pre-market Opening Period
	`CL_START`	Clearing Session Start – Markets tradable in T+1 Session
	`CL_CLOSE`	Clearing Session Close – All markets
	`AHT_CLOSE`	AHFT Market Closed – Markets tradable in T+1 Session
	`AHT_CLR_INFO`	AHFT Reset Price Information – Markets tradable in T+1 Session

Table 6 MARKET_HK_TradingState – technical implementation in QuantFEED® (Continued)

Component	Value	Description
Possible Values	`AHT_INACT_T_ ORDER`	AHFT Inactive Non T+1 Order – Markets tradable in T+1 Session
	`AHT_NEXT_DA Y`	AHFT Reset Price Information for the Next Business Day – Markets tradable in T+1 Session
	`AHT_OPEN`	AHFT Market Open – Markets tradable in T+1 Session
	`AHT_OPEN_PL`	AHFT Market Open – Markets tradable in T+1 Session with price limit control enabled
	`AHT_PRE_MKT_ACT`	AHFT PreMarket Activities – Markets tradable in T+1 Session
	`OPEN_PL`	Market Open – Markets enabled with price limit control
	`CLOSE_TODAY`	Market Closed for Today Trading – Markets tradable in T+1 Session
	`OPEN_DPL`	Market Open – Markets enabled with dynamic price banding mechanism
	`FAILOVER`	Site Failover – All markets

2.2.2. TradingStatus

Each time a modification of the trading status occurs, the values of the quotation tag **TradingStatus** conveyed on the ORION DERIVATIVES market data stream are disseminated via FeedOS data stream in *Other Values*:

- in the callback carrying the Level1 event `notif_TradeEventExt()`, for C++
- in the event handler `TradeEventExtEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifTradeEventExt`, for Java.

FeedOS implementation of the tag `TradingStatus` is described in the following table (newly added values are in `green`):

Table 7 Trading Status of the ORION DERIVATIVES market data stream – technical implementation in FeedOS

Component	Value	Description
Tag Name	`TradingStatus`	FeedOS tag name.
Numeric ID	9100	FeedOS unique ID broadcast on the S&P Capital IQ Real-Time Solutions data stream. It is the numeric equivalent of the tag name.
Type	`Enum`	Enumeration data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, as described below, concerning the characteristics of the trading status.
Possible Values	2	Trading Halt
	16	Trade Dissemination Time
	17	Ready to Trade
	18	Not Available for Trading
	21	Pre-Open

Quotation Data Sample

Below is an example of the quotation tags implementation before and after the upgrade (newly added tags are in `green`, tags disseminating updated values are in `blue`):

Quotation Data before 2014-12-15

```
InstrumentStatusL1
-- 109/20739
        BID: 24590       1       @1
        ASK: 24630       1       @1
        LastPrice                       float64{24592}
        LastTradeQty                    float64{1}
        DailyHighPrice                  float64{24621}
        DailyLowPrice                   float64{24590}
        DailyTotalVolumeTraded          float64{340}
        DailyTotalAssetTraded           float64{516719}
        LastTradePrice                  float64{24592}
        LastTradeTimestamp              Timestamp{2014-09-11 14:59:01}
        InternalDailyOpenTimestamp      Timestamp{2014-10-29 09:32:36:494}
        InternalDailyCloseTimestamp     Timestamp{2014-10-29 09:26:58:859}
        InternalDailyHighTimestamp      Timestamp{2014-10-29 09:32:37:021}
        InternalDailyLowTimestamp       Timestamp{2014-10-29 09:59:58:970}
        InternalPriceActivityTimestamp  Timestamp{2014-10-29 10:17:37:609}
        TradingStatus                   18=NotAvailableForTrading
        TradingSessionId                int8{1}
        LastOffBookTradePrice           float64{24600}
        LastOffBookTradeQty             float64{200}
        LastOffBookTradeTimestamp       Timestamp{2014-09-11 05:45:27}
        SessionTotalOffBookAssetTraded  float64{0}
        SessionTotalOffBookVolumeTraded float64{0}
        SessionTotalVolumeTraded        float64{21}
        SessionOpeningPrice             float64{24676}
        PreviousSessionClosingPrice     float64{24630}
        SessionHighPrice                float64{24621}
        SessionLowPrice                 float64{24590}
        SessionTotalAssetTraded         float64{516719}
        SessionClosingPrice             float64{24592}
        DailyOpeningPrice               float64{24619}
        DailySettlementPrice            float64{24630}
        PreviousDailyTotalVolumeTraded  float64{319}
        PreviousDailyTotalAssetTraded   float64{8377708}
        PreviousDailyClosingPrice       float64{24630}
        PreviousBusinessDay             Timestamp{2014-10-29}
        CurrentBusinessDay              Timestamp{2014-10-29}
        PreviousDailySettlementPrice    float64{24547}
        DailyTotalOffBookVolumeTraded   float64{0}
        DailyTotalOffBookAssetTraded    float64{0}
        OpenInterest                    float64{4198}
        PriceActivityMarketTimestamp    Timestamp{2014-09-11 15:00:00:050}
        SettlementPriceDate             Timestamp{2014-10-29}
        OpenInterestDate                Timestamp{2014-10-29}
        SettlementPriceType             char{a}
```

Quotation Data after 2014-12-15:

```
InstrumentStatusL1
-- 109/20738
        BID: 24582      1       @1
        ASK: 24656      1       @1
        LastPrice                       float64{24615}
        LastTradeQty                    float64{1}
        DailyHighPrice                  float64{24649}
        DailyLowPrice                   float64{24586}
        DailyTotalVolumeTraded          float64{44815}
        DailyTotalAssetTraded           float64{48475741}
        LastTradePrice                  float64{24615}
        LastTradeTimestamp              Timestamp{2014-09-11 14:59:58}
        InternalDailyOpenTimestamp      Timestamp{2014-10-29 03:45:10:293}
        InternalDailyCloseTimestamp     Timestamp{2014-10-29 03:40:40:188}
        InternalDailyHighTimestamp      Timestamp{2014-10-29 03:50:27:877}
        InternalDailyLowTimestamp       Timestamp{2014-10-29 04:19:03:556}
        InternalPriceActivityTimestamp  Timestamp{2014-10-29 05:34:01:647}
        TradingStatus                   2=TradingHalt
        TradingSessionId                int8{1}
        LastOffBookTradePrice           float64{24625}
        LastOffBookTradeQty             float64{12}
        LastOffBookTradeTimestamp       Timestamp{2014-09-11 08:10:37}
        SessionTotalOffBookAssetTraded  float64{0}
        SessionTotalOffBookVolumeTraded float64{0}
        SessionTotalVolumeTraded        float64{1969}
        SessionOpeningPrice             float64{24637}
        PreviousSessionClosingPrice     float64{24648}
        SessionHighPrice                float64{24649}
        SessionLowPrice                 float64{24586}
        SessionTotalAssetTraded         float64{48475741}
        DailyOpeningPrice               float64{24637}
        DailySettlementPrice            float64{24648}
        PreviousDailyTotalVolumeTraded  float64{42846}
        PreviousDailyTotalAssetTraded   float64{1056144833}
        PreviousDailyClosingPrice       float64{24648}
        PreviousBusinessDay             Timestamp{2014-10-29}
        CurrentBusinessDay              Timestamp{2014-10-29}
        DailyTotalOffBookVolumeTraded   float64{0}
        DailyTotalOffBookAssetTraded    float64{0}
        OpenInterest                    float64{40980}
        InternalLastAuctionTimestamp    Timestamp{2014-10-29 03:20:38:480}
        PriceActivityMarketTimestamp    Timestamp{2014-09-11 21:04:47:741}
        SettlementPriceDate             Timestamp{2014-10-29}
        OpenInterestDate                Timestamp{2014-10-29}
        SettlementPriceType             char{a}
        MARKET_HK_TradingState          string{CL_Start}
```

2.3. Changes to the Quotation Context Data

S&P Capital IQ Real-Time Solutions **updates** the values of the quotation context tags below:

Table 8 Quotation context tags disseminating updated values on the ORION DERIVATIVES market data stream

Tag Name	Numeric ID	Type
`TradeCondition`	277	String

2.3.1. TradeCondition

Each time a trade occurs, the values of the quotation tag **TradeCondition** conveyed on the ORION DERIVATIVES market data stream are disseminated via FeedOS data stream in *Context* to identify the particular condition applicable to a trade:

- in the callback carrying the Level1 event `notif_TradeEventExt()`, for C++
- in the event handler `TradeEventExtEventHandler`, for C#
- in the callback carrying the Level1 event `quotNotifTradeEventExt`, for Java.

FeedOS implementation of the tag `TradeCondition` is described in the table below:

Table 9 TradeCondition – technical implementation in FeedOS

Component	Value	Description
Tag Name	`TradeCondition`	FeedOS tag name.
Numeric ID	`277`	FeedOS unique ID broadcast on the S&P Capital IQ Real-Time Solutions data stream. This is the numeric equivalent of the tag name.
Type	`String`	String data type.
Format	*`[Exchange Specific Value]`*	An ***exchange specific value***, detailing the particular condition applicable to a trade.
Possible Values	`X`	Cross Trade

Quotation Context Data Sample

Below is an example showing the newly added (in `green`) quotation context tags:

```
"TE (TradeEvent) : MARKET_TIME INSTRUMENT LAST_PRICE TRADE_QTY BID_PRICE BID_QTY ASK_PRICE
ASK_QTY *CONTENT_MASK* *FLAGS*"
"VU (ValuesUpdate) : SERVER_TIME INSTRUMENT VALUES..."

VU  06:39:59:114   228610522   TradingStatus=17
TE  06:39:59:114   228610522   0.99   1.04   0.99   10102@1   0.89   9616@1 L
TradeCondition=X
```

2.4. Addition of the Multi-session Kinematics

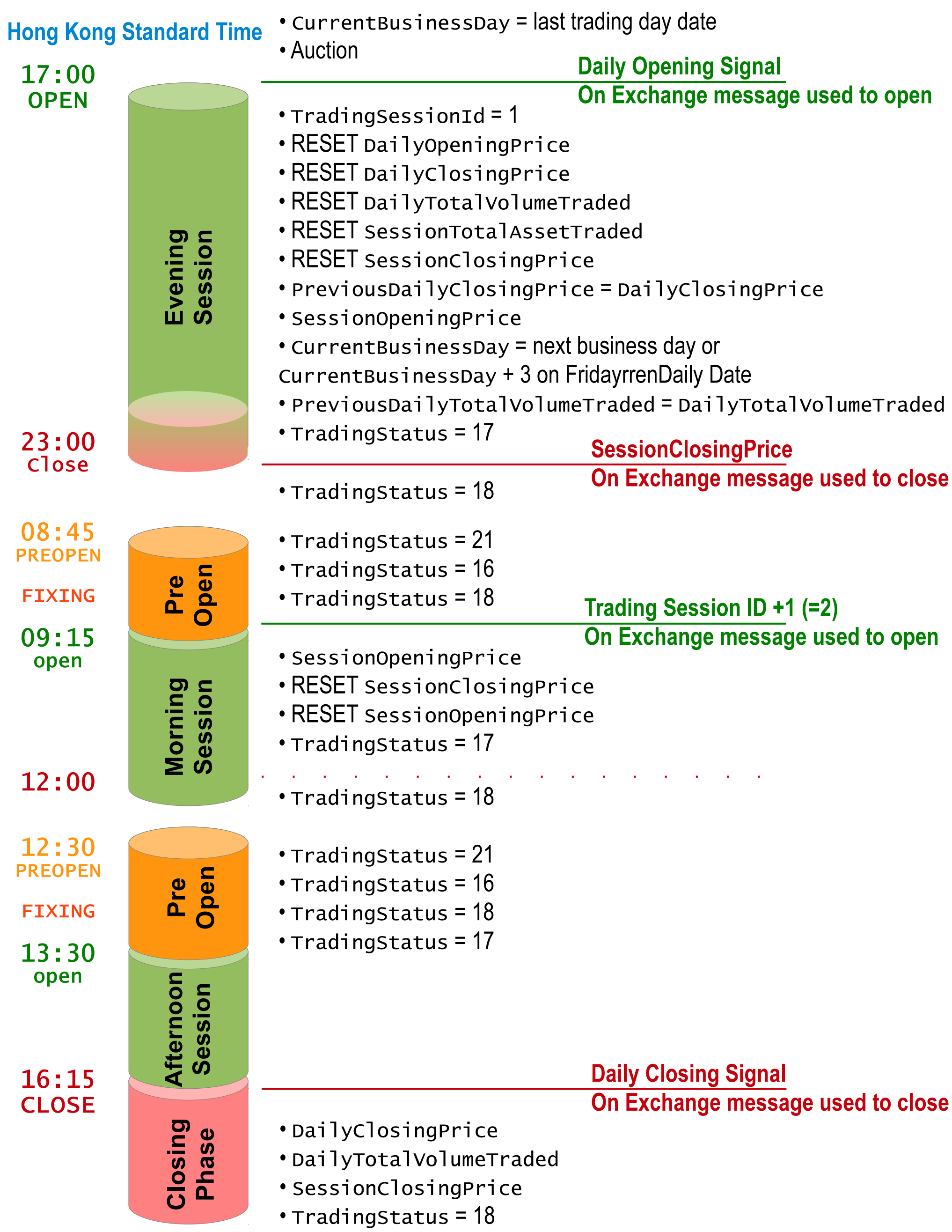
The following segments have now multi-session kinematics:

- HangSengIndexFuturesAndOptions
- HSharesIndexFuturesAndOptions

- MiniHangSengIndexFuturesAndOptions
- RenminbiCurrencyFutures
- AsiaCommoditiesFutures
- ThermalCoalFutures.

The diagram below describes the main trading phases and the update mechanism of the tags available for a HSI Future available on the ORION DERIVATIVES market data stream:

Figure 9-1 Example of tags update mechanism for a HSI Future on the ORION DERIVATIVES market data stream in Hong Kong Standard Time



2.5. Changes to the MBL Book Depth*

Effective 2014-12-15, the **MBL Book** on the ORION DERIVATIVES market data stream has a **10-level depth**.

3. Finding the Latest Information

For the latest documentation and product updates, additional support and training, please contact our support services:

- E-mail: rts-support@spcapitaliq.com
- Web: http://support.quanthouse.com.

* The MBL data may not be included by default in your Level1 data subscription, but sold separately. Depending on your contract, additional terms, conditions and fees may apply. For more details about the subscription options, please contact S&P Capital IQ Real-Time Solutions.