DSB TOTV and uTOTV Functionality

Functional Specification Document

Author: Derivatives Service Bureau
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Contents

Preface

Change History

Date	Change	Version	Author	Revision Details
27 May 2017	Creation	1.0	Kuhan T	

1 Introduction

1.1 Document Purpose

The purpose of this document is to set out the functional specification to extend the Derivatives Service Bureau (DSB) service to include Traded on a Trading Venue (TOTV) and underlying Traded on a Trading Venue (uTOTV) indicators as requested by the industry via the Product Committee and broader consultation.

1.2 Background

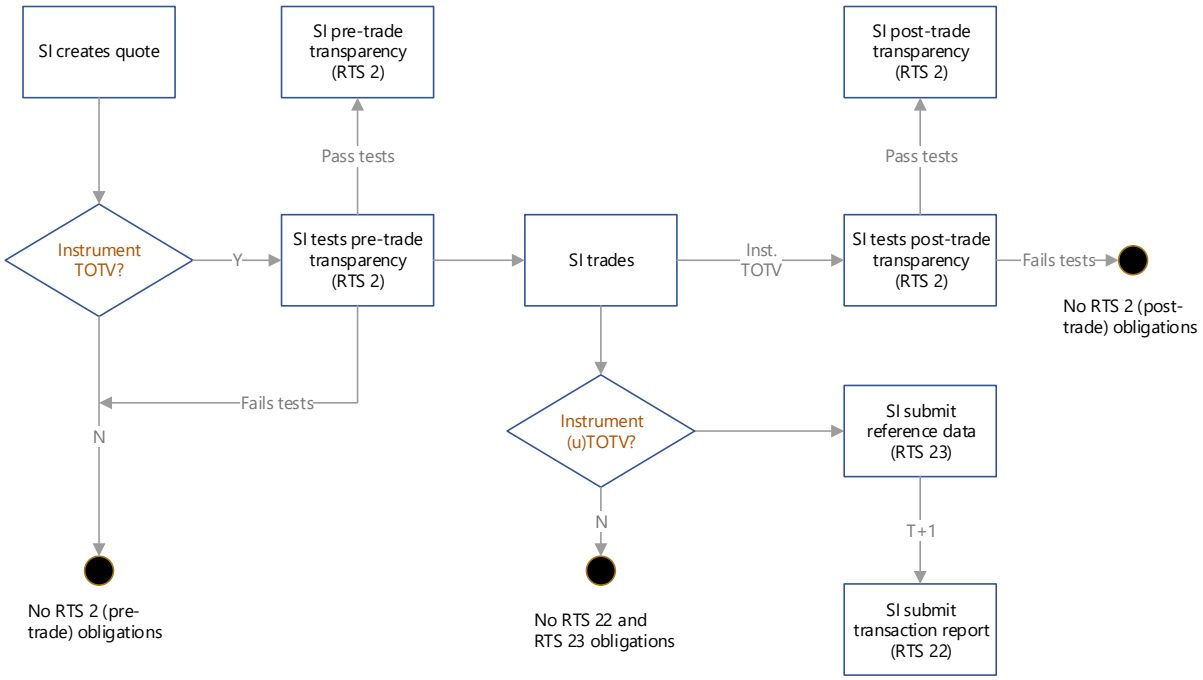
The DSB core service is to provide ISINs for OTC derivatives. The key focus of the service extension is to mark those ISINs as Traded on a Trading Venue (TOTV) and those that have an underlying Traded on a Trading Venue (uTOTV).

In addition, the expectation is for ESMA's reference data system (FIRDS) to publish key ESMA attributes alongside each of the entries in the system. Many of the new business processes across the industry that require ISINs also use this ESMA published data. The DSB service aims to bring those two different datasets together to facilitate the access to that data from a single source.

The TOTV and uTOTV indicators, as well as the other ESMA sourced data will be available alongside the ISIN but will not be part of the ISIN product definition. This means that as and when the ESMA data or definitions change, there will be no need to alter the ISIN definition itself, just the associated MiFID II dataset.

1.3 High Level Workflow

The below is an example high level workflow for a systematic internalizer (SI) quoting and then trading an instrument, demonstrating some of the ways the TOTV flag would be used.



The test for TOTV at the pre-trade stage determines whether there are any MiFID II reporting or transparency obligations. The additional fields being considered for the MiFID II Dataset will provide the criteria for the pre-trade transparency tests.

The test for TOTV or uTOTV at the post-trade stage determines whether there are any further MiFID II reporting or transparency obligations. The additional fields being considered for the MiFID II Dataset will provide the criteria for the post-trade transparency tests.

2 Scope

2.1 Instrument Scope

The DSB MiFID II Dataset service will be available for all the products for which the DSB issues ISINs. This is currently defined using a combination of CFI Code (ISO 10962: 2015) Letter #2: Group (R-Rates, E-Equity, C-Credit, F-Foreign Exchange and T-Commodities) and CFI Code Letter #1: Category (H-Non-listed and complex options; S-Swaps and F-Forwards).

The DSB will publish a definitive set of the instruments covered by the service. The provisional products can be found here: www.GitHub.com/anna-dsb/ .

Additionally, for non-OTC ISINs, the DSB will store the ISIN and the associated MiFID II Dataset

2.2 MiFID II Dataset Scope

The DSB will import the following classifications, flags and thresholds from FIRDS:

RTS 2 Reference Data Attribute Name	Example Value
Date	2017-06-09
Liquidity Flag	TRUE
Pre-Trade Large in Scale (LIS) Threshold	300,000
Pre-Trade Size Specific to The Instrument (SSTI)	250,000
Post-Trade Large in Scale (LIS) Threshold	1,500,000
Post-Trade Size Specific to The Instrument (SSTI)	1,250,000

The DSB will derive, detail provided in this document, the following key attributes:

Derived Attribute Name	Example Value
Traded on a Trading Venue	TRUE
Underlying Traded on a Trading Venue	FALSE
On FIRDS Flag	TRUE

Constraints

- The imported fields are the expected dataset published by FIRDS. Once that has been fully defined, the DSB will revisit this list of attributes

3 Key Requirements

3.1 System requirements

Below are the set of key system requirements for the DSB MiFID II Data Service:

#	Requirement	Description	Frequency
1.1	Add MiFID II Dataset	Against each ISIN, the system will hold the relevant MiFID II Dataset. This dataset is defined in section 2.2 and will include the TOTV and uTOTV flags.	Ongoing
1.2	No ISIN Change	When the values or the list of attributes included in the MIFID II Dataset change, the system will not consider this a change or update to the ISIN definition.	Ongoing
1.3	Update TOTV Flag	For each ISIN, the system will update the TOTV flag (following the process specified in section 5). Note, this frequency will be equal to the rate at which FIRDS is updated.	Daily (=FIRDS)
1.4	Update uTOTV Flag	For each ISIN, the system will update the uTOTV flag (following the process specified in section 5).	Daily and On Creation
1.5	Update MiFID II Dataset	For each ISIN, the system will update the additional MiFID II Dataset (following the process specified in section 5).	Daily
1.6	Instrument Expiry Update	The DSB will mark all expired OTC derivatives as non-TOTV and non-uTOTV.	Daily

3.2 User requirements

Below are the set of key user requirements for the DSB MiFID II Data Service:

#	Requirement	Description	Frequency
2.1	MiFID II Dataset Access	The MiFID II Dataset will be available via all the existing connectivity methods to the DSB: • GUI • File Download • ReST API • FIX API	Ongoing
2.2	ISIN Request	When a user requests an ISIN using the set of attributes as specified in the appropriate product definition, in addition to returning the full ISIN record, the system will return the associated MiFID II Dataset.	On request
2.3	Search	When a user searches for an ISIN using either a set of attributes or the ISIN itself, the record returned will include the MiFID II Dataset.	Ad-hoc
2.4	Search by MiFID II Dataset	The MiFID II Dataset will be fully searchable alongside the ISIN definition attributes. The DSB search function uses Apache Lucene Query Parser Syntax.	Ad-hoc

		A user-guide for the DSB's search capability can be found here:	
2.5	Updates to subscribers	FIX users connected to the DSB using a subscription will receive the ISIN if any of the MiFID II Dataset attributes change.	Ongoing

4 TOTV/uTOTV Proposed Solution

The DSB evaluated various alternative solutions before arriving at the proposal detailed below. These alternative solutions can be found in section 9.1.

This current section provides the definitions for each of the DSB derived attributes within the MiFID II Dataset.

4.1 TOTV Definition

- If the instrument is in FIRDS and the MIC identifies an approved European trading venue, then the instrument is TOTV

4.2 uTOTV Definition

- If the instrument has a single underlier and that underlying instrument is TOTV (as defined in section 4.1) then the instrument is uTOTV
- If the instrument has multiple underliers and all the underlying instruments are TOTV (as defined in section 4.1 then the instrument is uTOTV
- If the instrument has a European index as an underlier then the instrument is uTOTV

4.3 On FIRDS Definition

- If the instrument is present in FIRDS, this flag will be set to True
- All creation of ISINs will produce an ISIN with an On FIRDS equal to False

4.4 TOTV Assumptions

The below are the set of assumptions the DSB will use when determining whether an ISIN instrument is Traded on a Trading Venue.

- Regulated Markets must submit the reference data, including an ISIN, to their NCA or ESMA, for all instruments that are admitted to trade or for which a request for admittance has been made
- MTFs and OTFs submit reference data, including an ISIN, to their NCA or ESMA, for all instruments traded or for which there are quotes on that day
- The above is true for all instruments within the scope of MiFID II as defined in the directive, Annex I Section C
- ESMA has defined TOTV as all the relevant RTS 23 fields including the ISIN but excluding all Issuer and venue related attributes. https://www.esma.europa.eu/file/22204/download?token=-DLnIjMW (paragraphs 11 – 13)
- If an ISIN is not on FIRDS but the instrument is uTOTV, then the ISIN is not required for post-trade reporting
- If the attribute is not required for the reference data reporting for a product, it will not form part of that product's TOTV definition
- If the definition of TOTV does not change, once an instrument is marked as TOTV it is considered TOTV until it expires

4.5 Risks

4.5.1 TOTV Source

A number of challenges are listed in the appendix (section 9.1.1) for the chosen TOTV option. In summary, these are focused on the issue surrounding timing: because FIRDS public data is provided on a T+1 basis, any TOTV operation based on that will similarly be on a T+1 basis.

There is a risk that relying exclusively on the FIRDS data will not be acceptable to the regulator given that FIRDS data is not based on real-time information on what is actually being traded or quoted on an MTF or OTF and also given that ESMA has stated that FIRDS data should not be utilised as the Golden Source of data.

There are two main mitigating factors for this risk:

- Trading Obligation, although not being enforced on day 1 of MiFID II, will come into play and as currently structured would cover many of the challenges surrounding the timing issue for instruments within its scope
- The DSB could supplement the FIRDS approach with an additional real-time TOTV solution based on Option 3 (section 9.1.3) – enhance and use the creation data or ISIN retrieval to drive the TOTV indicator and the relevant associated uTOTV indicators

4.5.2 European Index Identification

The requirement for instruments that have a European index as an underlying to be treated as uTOTV means additional analysis will be required by the DSB to identify those indices that are European versus those that are not.

There is a risk that finding an authoritative source that identifies an index as being European will be difficult and the DSB will be required to base its identification on inferred state rather than an explicit property.

The main mitigation for this will be for the DSB to draw on the expertise within the industry to validate any approach for index categorization other than where the index itself explicitly states its basis.

4.5.3 Indices with one or more TOTV underliers

The requirement for indexes to contain underliers that are traded on a trading venue has a potential ambiguity regarding whether the entire population must meet the TOTV criteria or whether one of them is sufficient to bring it into scope.

If the ambiguity is resolved to mean that one underlier is sufficient then a robust process needs to be implemented to investigate each constituent of every index.

4.5.4 Single Name Credit Default Swaps with LEI underlier

The current product definition for Single Name CDS permits either an LEI or an ISIN as the underlier. This presents two potential risks for the uTOTV process:

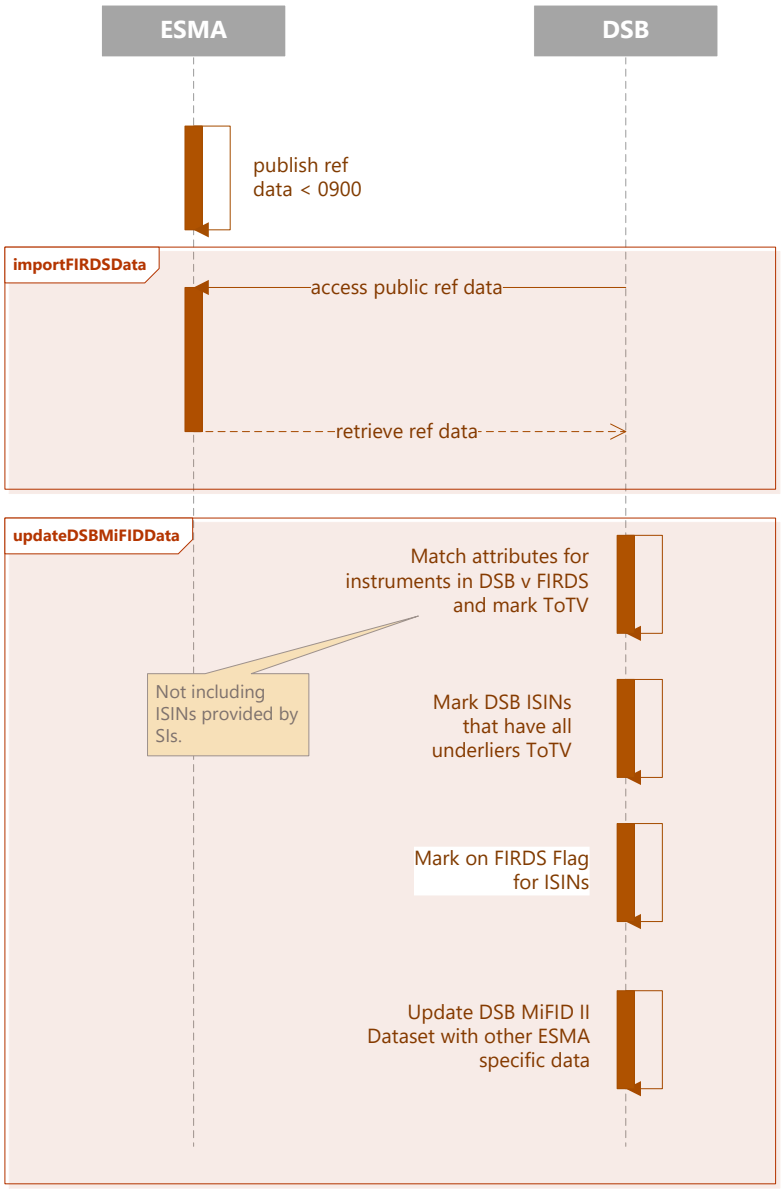
- It is currently not possible to assess whether a particular issuer identified with an LEI is TOTV
- The same essential instrument but with two different ISINs can be created in two ways: one with the ISIN and one with the LEI – in the current model, the instrument with an ISIN underlier might be marked as uTOTV whereas the instrument with an LEI underlier will not be marked as uTOTV

The challenge for a Single Name CDS being created using either an ISIN or an LEI as an underlier is being addressed by the DSB Product Committee. Should the resolution for that problem still result in Single Name CDS with an LEI underlier, the DSB would have to devise an additional rule to deal with this circumstance.

5 System Workflows

5.1 Create MiFID II Dataset

The below workflow presents the steps the DSB will follow to create the MiFID II Dataset.



Step	Description
Access public reference data	**Assumptions** • ESMA enables systematic retrieval of public reference data • FIRDS public data contains a mixture of data from European Trading Venues and Systematic Internalisers • ESMA publishes and maintains a set of approved MIC codes for European Trading Venues and Systematic Internalizers • ESMA publishes a delta of new instruments or changes in instrument reference data each day

Step	Description
	Description Daily, the system accesses ESMA's instrument reference data service. This must be executed as early in the morning as soon as ESMA publish their new set of data (=< 0900) **Constraints** The DSB will not import nor consider in the following steps any ISIN with an historic expiry date.
Retrieve reference data	**Assumptions** • Reference data is keyed on ISIN and MIC • All RTS 23 data attributes and RTS 2 Thresholds and liquidity flag are retrieved for each ISIN **Description** The system imports the instrument reference data and updates the DSB cache of ESMA data.
Match attributes for instruments in DSB v FIRDS and mark ToTV	**Assumptions** • DSB has access to an up-to-date list of MICs for approved trading venues in the EU **Description** For all entries in the DSB cache of ESMA data, where the set of attributes for each asset class (see Appendix for details) match any ISIN record in the DSB and the MIC equals a valid European trading venue, set the ToTV flag to TRUE in the DSB MiFID II dataset. **Contraints** Where the ISIN has been issued by the DSB and the attributes held in FIRDS do not match the attributes the DSB holds, the DSB will not mark the ISIN as TOTV.
Mark DSB ISINs that have all underliers ToTV	**Assumptions** • Underlying ISINs for DSB instruments are correct **Description** For all DSB instruments, match the underlying ISIN against the entire ESMA data cache. Where the ISIN exists in the cache and the MIC equals a valid European trading venue, update uToTV flag in the DSB MiFID II dataset on the DSB instrument. For those DSB instruments that have an index as an underlying, these will be marked as uTOTV.
Mark on FIRDS Flag for ISINs	**Assumptions** **Description** For all DSB instruments, mark those ISINs that are present on FIRDS as TRUE and those not as FALSE. This ensures that investment firms trading an instrument that is uToTV will know whether to use the ISIN for transaction reporting or not.

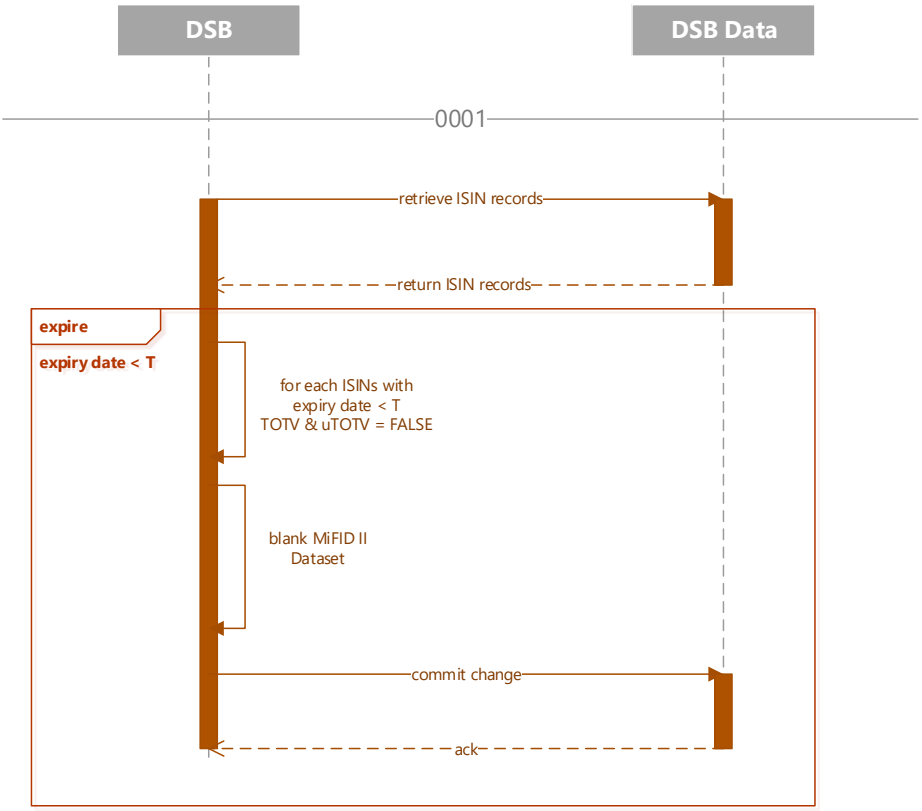
Step	Description
Update DSB MiFID II Dataset with other ESMA specific data	**Assumptions** **Description** Update the DSB MiFID II Dataset with all new values for the attributes stated in the Attribute Scope section.

5.2 Check uTOTV on Creation

The step in section 5.1 called "Mark DSB ISINs that have all underliers ToTV" will also be executed every time an ISIN is created.

5.3 Instrument Expiry

The below is the process the DSB will follow to update the TOTV and uTOTV indicators of expiring instruments:



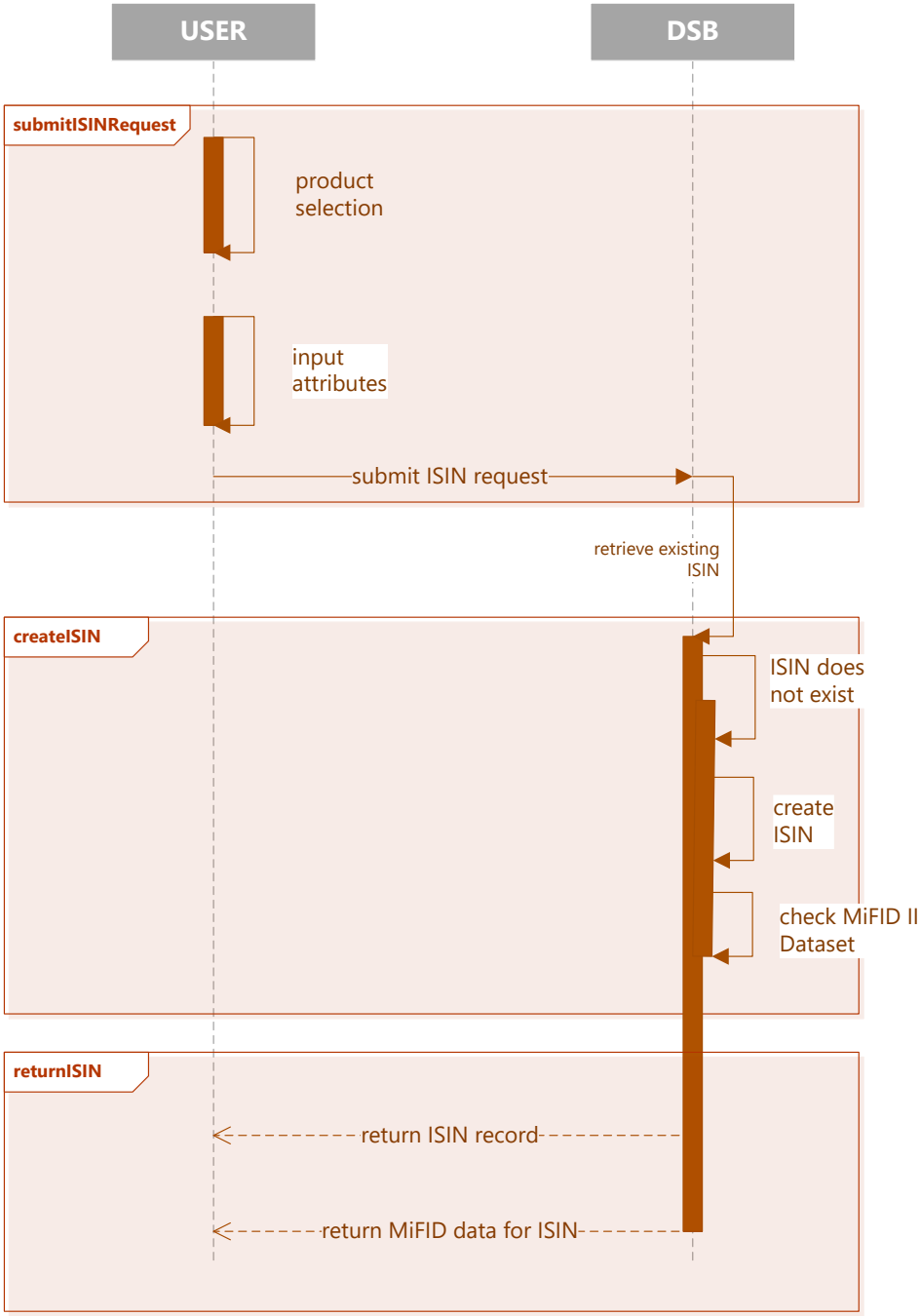
Step	Description
Retrieve ISIN records and return ISIN records	**Assumptions** **Description** At 0001 UTC, the DSB will retrieve ISIN records from the database with expiry date = previous day.
For each ISIN with expiry date < T, TOTV & uTOTV = FALSE	**Assumptions** **Description**

Step	Description
	For each retrieved ISIN, verify the expiry date is historic and set TOTV and uTOTV = FALSE.
Blank MiFID II Dataset	**Assumptions** **Description** All remaining MiFID II Dataset attributes set to blank.
Commit change and ack	**Assumptions** **Description** Submit changed record to the database and loop to execute on the next ISIN.

6 User Workflows

6.1 ISIN Request

The below presents the steps the DSB will follow for a user requesting an ISIN using a complete set of attributes as specified by the appropriate request template / product definition.



Step	Description
Product Selection, Input Attributes and submit ISIN request	**Assumptions** • User submits syntactically valid set of values for product definition • User's connection is consistent and secure **Description** User selects the correct product template using Asset Class, Instrument Type and Product to define which attributes they must populate. They populate all the input attributes with values and then submit to the DSB.
Retrieve existing ISIN	**Assumptions** • DSB is operational **Description** As per the usual workflow for using the GUI, the user submits the user attributes and after normalizing the data the DSB searches through the existing ISIN instruments and retrieves the full record if there's a match.
ISIN does not exist	**Assumptions** • All required user input DSB OTC ISIN data is present and correct **Description** If the ISIN does not exist, the DSB begins the create ISIN process.
Create ISIN	**Assumptions** • ISIN does not already exist • User has permissions to create an ISIN **Description** The DSB goes through the normal creation processes for generating a new ISIN and its associated data to create a complete record.
Create MiFID II Dataset	**Assumptions** • The ISIN does not exist in FIRDS **Description** The ISIN, being created today, must be TOTV = FALSE and on FIRDS = FALSE. However uTOTV is possible to assess: • uTOTV – complete uTOTV test and mark the flag as per result
Return ISIN record and return MiFID data for ISIN	**Assumptions** **Description** Return the full ISIN record to the GUI along with the MiFID II dataset.
Display on same page	**Assumptions** **Description** Render the ISIN record and alongside it the MiFID II data points.

7 Optional Functionality

This section contains additional functionality that the DSB has received feedback on as part of performing its TOTV/uTOTV analysis. They are included here so the industry can provide further comments to the DSB as to whether it makes sense for the utility to provide these in a single place along with the rest of the service.

7.1 Non-OTC TOTV/uTOTV Functionality

The DSB can optionally extend the TOTV/uTOTV functionality to cover non-OTC ISINs.

Instrument Scope

The functionality will be available for the full scope of instruments submitted to ESMA under MiFID II Article 27 / RTS 23 obligations for trading venues and systematic internalizers to submit reference data.

Key Considerations

- Non-OTC ISIN reference data follows the same format and structure as OTC ISIN reference data
- The DSB will be able to publish the data specified in section 2.2 alongside the Non-OTC ISIN
- The Non-OTC ISINs will be retrievable and searchable in the same way as an OTC ISIN
- When there are multiple entries for a single Non-OTC ISIN but different attributes are held against them, the DSB will use the set of values for the first entry with a valid EU Trading Venue.

7.2 Sub-Class Identification

The DSB can optionally provide a sub-class identification process for the OTC ISINs. This has potentially two immediate benefits for the industry:

- For OTC derivatives, Systematic Internalizers are defined at the sub-class level
- For new OTC instruments that are uTOTV, identifying the sub-class will enable market participants to identify the relevant liquidity flag, LIS and SSTI thresholds

Key Considerations

- CFI Codes have a many-to-many relationship with the ESMA RTS2 Sub Asset class categorization
- Sub-Class will change over time for products where the final segmentation criteria is based on maturity bucket
- Changes in the sub-class will trigger an ‘update’ to FIX subscribers

8 Technical Detail

This section includes the technical implementation detail of the MiFID II Data Service as required by the DSB User base.

8.1 MiFID II Dataset Data Types

Below are the data types specified for the MiFID II Dataset with example values:

RTS 2 Reference Data Attribute Name		Example Value
Date	Date	2017-06-09
Liquidity Flag	String	TRUE
Pre-Trade Large in Scale (LIS) Threshold	Integer	300,000
Pre-Trade Size Specific to The Instrument (SSTI)	Integer	250,000
Post-Trade Large in Scale (LIS) Threshold	Integer	1,500,000
Post-Trade Size Specific to The Instrument (SSTI)	Integer	1,250,000
Traded on a Trading Venue	Boolean	TRUE
Underlying Traded on a Trading Venue	Boolean	FALSE
On FIRDS Flag	Boolean	TRUE

8.2 GUI Access

The MiFID II Dataset will be another group of attributes returned alongside the ISIN record on request or search by a user.

One point to note is that the MiFID II Dataset attributes can be used in any search being executed by a user via the current interface.

8.3 ReST and FIX Access

The MiFID II Dataset will be visible to users as an additional data group alongside the ISIN record:


```
▼ MiFIDIIDataset:
    Date:                "20170609"
    PreTradeLIS:         300000
    PreTradeSSTI:        250000
    PostTradeLIS:        1500000
    PostTradeSSTI:       1250000
    Liquidity:           "TRUE"
    TOTV:                "TRUE"
    uTOTV:               "FALSE"
```


Note that changes in the MiFID II Dataset values will trigger an update record to FIX subscribers.

8.4 File Download

Access to TOTV/uTOTV and associated attributes will also be available via the existing file down capability.

Note that changes in the MiFID II Dataset values will mean the changed record will be saved in the file for the day the change occurred.

9 Appendix

9.1 Sources of Data for TOTV/uTOTV Determination

The DSB has considered several options for sourcing the data for TOTV / uTOTV determination:

9.1.1 Source 1 – Utilize FIRDS data

Use FIRDS to define TOTV. If the ISIN is present in the FIRDS database and the reporting MIC is an approved Trading Venue then the ISIN is TOTV.

A TOTV service can use a combination of FIRDS, using the MIC and the ISIN, with the DSB ISIN Database (because ISIN granularity is greater than the RTS 23 product attributes) to identify which products are considered TOTV and uTOTV.

9.1.1.1 Challenges

1. FIRDS is only available T+1. Depending on how Trading Venues approach reference data reporting, there is the possibility that some instruments will not be transparent on the day of their greatest liquidity due to the inclusion of the expiry date within the product definition.
2. Trades or quotes that occur on a trading venue after 1800 on T do not need to be reported as reference data which means, potentially, there will be products that are TOTV but will not be treated as such until T+2.
3. ESMA has stated that FIRDS should not be used as the Golden Source of data, therefore relying exclusively on this source may cause regulatory concern

9.1.2 Source 2 – Utilize APA Data

Collate APA published data and combine the information in real-time to drive TOTV for all DSB OTC ISINs.

A TOTV can use a combination of APA data, using the MIC and the ISIN (where available) with the DSB ISIN Database to identify which products are TOTV and uTOTV.

9.1.2.1 Challenges

1. Some APA post-trade disclosure data will have the ISIN plus some transactional data. However, some APA post-trade disclosure data will not have the ISIN. Indeed, there's no requirement for them to publish sufficient data to create an ISIN. Given that TOTV is defined including the ISIN, this means that the set of data published by an APA without an ISIN cannot be assessed as being TOTV or not.
2. Some transactions submitted for post-trade disclosure will be subject to deferrals – some of these deferrals can extend to T+2; any collection of post-trade disclosure data 'real-time' will not necessarily contain these products.
3. APA pre-trade transparency data has no requirement to use the ISIN or, in fact, publish any detailed product attributes for a quote. Again, since the ISIN is included in the TOTV discussion, any pre-trade data that does not already voluntarily have the ISIN is unlikely to be useful in determining TOTV.
4. There is no requirement for an SI or a Trading Venue to use an APA for pre-trade transparency. Collection of pre-trade data from the APAs will be incomplete and therefore will not provide the full set of TOTV products in real-time.

9.1.3 Source 3 – Utilize ISIN Creation Data

The DSB could look at amending the ISIN request interaction by adding a flag for all users to indicate whether the ISIN will be 'available to trade' on a trading venue.

This would capture all new instruments in real-time for TOTV.

9.1.3.1 Challenges

1. Requires a change in the DSB technical implementation and those of the entire industry
2. Investment Firms might consider revealing that intention as a breach of confidentiality and that might put their own trading strategies at risk.
3. There would have to be a reconciliation at the end of the day to ensure ISINs declared as TOTV by an investment firm had, in fact, also been requested and marked by a trading venue.

9.2 Asset Class ToTV Attributes

Below are the sets of attributes for each asset class that will be used in the first instance for defining Traded on a Trading Venue.

9.2.1 Rates

ISO Attribute	RTS23 Field#
Identification	1
Full Name	2
Classification Type	3
Commodity Derivative Indicator	4
Notional Currency	13
Expiry date	24
Price Multiplier	25
Option Type	30
Option Exercise Style	33
Delivery type	34
ISO Reference Rate	40
Reference Rate Term Unit	41
Reference Rate Term Value	41
ISO Other Leg Reference Rate	45
Other Leg Reference Rate Term Unit	46
Other Leg Reference Rate Term Value	46

9.2.2 Credit

ISO Attribute	RTS23 Field#
Identification	1
Full Name	2
Classification Type	3
Commodity Derivative Indicator	4
Notional Currency	13

Expiry date	24
Price Multiplier	25
Underlying instrument ISIN	26
Underlying instrument LEI	27
ISO Underlying Instrument Index	28
Underlying Instrument Index Term Unit	29
Underlying Instrument Index Term Value	29
Option Type	30
Option Exercise Style	33
Delivery type	34

9.2.3 Foreign Exchange

ISO Attribute	RTS23 Field#
Identification	1
Full Name	2
Classification Type	3
Commodity Derivative Indicator	4
Notional Currency	13
Expiry date	24
Price Multiplier	25
Option Type	30
Option Exercise Style	33
Delivery type	34
Other Notional Currency	47
FX Type	48

9.2.4 Equities

ISO Attribute	RTS23 Field#
Identification	1
Full Name	2
Classification Type	3
Commodity Derivative Indicator	4
Notional Currency	13
Expiry date	24
Price Multiplier	25
Underlying instrument ISIN	26
ISO Underlying Instrument Index	28
Option Type	30
Option Exercise Style	33
Delivery type	34

9.2.5 Commodities

ISO Attribute	RTS23 Field#
Identification	1
Full Name	2
Classification Type	3
Commodity Derivative Indicator	4
Notional Currency	13
Expiry date	24
Price Multiplier	25
Underlying Instrument ISIN	26
Underlying Instrument Index	28
Option Type	30
Option Exercise Style	33
Delivery type	34
Base Product	35
Sub Product	36
Additional Sub Product	37
Transaction Type	38
Final Price type	39