DSB ToTV and uToTV Functionality

Functional Specification Document

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Contents

Preface 4
Change History 4
1 Introduction 5
1.1 Document Purpose 5
1.2 Background 5
1.3 Response Highlights 6
1.4 High Level Workflow 9
1.5 Previously Open Issues 10
1.6 Questions for Industry 11
2 Scope 15
2.1 Instrument Scope 15
2.2 MiFID II Dataset Scope 15
3 Key Requirements 17
3.1 System requirements 17
3.2 User requirements 18
4 ToTV/uToTV Proposed Solution 19
4.1 DSB's ToTV Flag 19
4.2 ToTV Effective Date 19
4.3 DSB's uToTV Flag 19
4.4 uToTV Effective Date 19
5 System Workflows 20
5.1 System Diagram 20
5.2 High-Level Create MiFID II Dataset 21
5.3 State transitions ToTV/uToTV 24
6 Key Constraints 25
6.1 Access to updated European MIC / SI list 25
6.2 FIRDS Reference Files 25
6.3 FIRDS Transparency Files 26
6.4 FIRDS sample data format assumptions 27
6.5 ISIN being part of the ToTV definition 27
7 User Workflows 28
7.1 ToTV Request 28
8 Technical Detail 29

8.1 JSON for MiFID II data 29
8.2 GUI Access 33
8.3 ReST and FIX Access 33
8.4 File Download 33
9 Availability 34
10 Performance 34
11 FAQ 35
12 Appendix 39
12.1 Sources of Data for ToTV/uToTV Determination 39
12.2 Asset Class ToTV Attributes 41

Preface

Change History

Date	Change	Version	Author	Revision Details
27 May 2017	Creation	1.0	Kuhan T	
9 August 2017	Update	1.1	Natalia Kozlovich	Incorporated Industry feedback and added detailed workflows
20 September 2017	Update	1.2	Natalia Kozlovich	An update on items that were previously under analysis, open questions, and additional details of ongoing analysis
9 October 2017	Update	1.3	Natalia Kozlovich	Various updates to incorporate industry feedback, changes to ToTV JSON template and additions to FAQ

1 Introduction

1.1 Document Purpose

The purpose of this document is to set out the functional specification for extending 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.

The previous version of ToTV and uToTV Functional Specification Document (v1.2) published on 20 September 2017 sought industry feedback on the following (section 1.6):

- Timing for the intra-day provision of ToTV/MiFID II data
- Provision of a complete FIRDS Reference Data record at the MIC level for both OTC and non-OTC ISINs
- Setting ToTV/uToTV as NULL until the instrument or underlying instrument is reported by at least one trading venue
- The ToTV JSON record structure
- Key DSB assumptions

This version of the document provides an update on the questions raised in the previous version of the document, significantly expands the FAQ section, highlights amendments made to the JSON record structure and seeks industry feedback on section 1.3.4.

The document is based on the DSB's understanding of the prevailing rule set and access to open data - thus should not be treated as regulatory guidance. Users are requested to obtain individual legal counsel when making their determination.

1.2 Background

The DSB's core service is to provide ISINs for OTC derivatives. The key focus of this service extension is to assist with the process of identifying those ISINs that are Traded on a Trading Venue (ToTV) and those that have an underlying instrument that is 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 and for ESMA to publish LIS and SSTI data as part of the transparency reporting 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 different datasets together to facilitate the access to that data from a single source.

The DSB ToTV and uToTV indicators, as well as the other ESMA sourced data will be available alongside the ISIN in a separate JSON file as defined section 8.1 of this document. API users wishing to use the DSB's ToTV/ uToTV service will need to undertake development effort, while GUI users will be provided with ToTV/ uToTV information (at MIC level) via the DSB GUI.

The DSB should not to be treated as a golden source of ToTV or uToTV data and should be one input into a multi-factor determination by each user:

- The DSB's initial implementation of ToTV will be using FIRDS data as the only source to set the ToTV/uToTV values and ESMA has stated that FIRDS should not be used as the Golden Source.
- FIRDS data are only available at T+1, i.e. an instrument traded on a venue today, will only be marked as ToTV tomorrow when the processing of FIRDS data will have been completed.
- Trades or quotes that occur on a trading venue after 1800 on T+0 do not need to be reported as reference data which means, potentially, there will be products th at are ToTV but will not be treated as such until T+2.
- The DSB uToTV indicator needs to be fully understood before being utilized by industry (section 4.3).
- The DSB will not identify instruments with underlying index/basket of indices as uToTV as described in 1.5.1
- In light of recently published trading obligation draft RTS where ESMA classified a subset of fixed-to-float IRS and CDS indices as sufficiently liquid and subject to on-venue trading, there will be no change to the DSB's ToTV/uToTV determination process at this time. In accordance with its standard approach, the DSB will only set ToTV/uToTV flags to instruments that have been reported to FIRDS.

1.3 Response Highlights

The DSB received 23 responses to the draft functional specification - nine were questions about aspects of the document and 13 were focused on feedback. Feedback providers included one trade association, six sell-side organisations, four buy-side institutions and two vendors.

General feedback to each question raised in the previous ToTV and uToTV Functional Specification Document is set out below, with specific matters addressed in the body of this document.

1.3.1 Inclusion of non-OTC data

The previous paper asked whether the industry saw value in the DSB also providing ToTV information for non-OTC instruments so that the information would be available in a single place along with the rest of the service. Responses received: 31% agreed, 8% disagreed and 61% silent.
DSB Decision (9th Aug 2017): The DSB had previously committed to investigate the additional work required to undertake the provision of this data pool in addition to the core DSB OTC service.
Update (20th Sep 2017): The DSB will provide ToTV/MiFID II information for non-OTC instruments at the MIC level to enable users to make their own determination. The DSB defines non-OTC products as those not issued by the DSB, but received as part of the FIRDS Reference and Transparency files that are processed.

- Subject to industry feedback to the contrary (please refer to section 0), the DSB will provide a complete FIRDS Reference Data record for OTC instruments as part of the ToTV file in the same manner as for non-OTC ISINs.
- For Transparency Data (LIS, SSTI, Liquidity), the DSB will provide non-equity transparency results only on day 1 as equity transparency information is already available from other sources as a result of MiFID I (please refer to section 6.3).

1.3.2 Provision of sub-class

The previous paper asked whether the DSB should provide sub-class identification for OTC ISINs as part of the DSB ToTV service. Responses received: 23% agreed, 8% disagreed and 69% silent.

DSB Decision (9th Aug 2017): The DSB had previously committed to investigate the provision of sub-class, but as a low priority item. This means provision for Day 1 is unlikely.

Update (20th Sep 2017): The DSB assumption is that sub-class is not in the FIRDS Transparency data and if the assumption holds true, given the proximity of MiFIR Go Live, the time to run analysis on ways of sourcing this data is limited. As a result, the DSB will not provide sub-class identification as part of the DSB ToTV service for Day 1, but will investigate the provision of sub-class in 2018, subject to prevailing industry demand.

1.3.3 Using FIRDS to determine ToTV indicators

The previous paper asked whether the FIRDS data should be the determinant of the DSB ToTV indicators. Responses received: 15% agreed, 15% disagreed and 70% were silent. Of the 15% of industry participants who disagreed, none suggested any alternative means of sourcing ToTV data.

DSB Decision (9th Aug 2017): The DSB will use the FIRDS data to determine the value of its ToTV/uToTV indicators (in the absence of a viable alternative for a service requested by industry) but remain mindful that additional sources may need to be incorporated at a future date once viable sources have been identified.

1.3.4 Core ToTV/ uToTV data attributes

(i) The general feedback on the uToTV functionality was that if an Index has at least one constituent that is ToTV, an instrument with that index underlying will be uToTV.

(ii) A number of industry participants requested the inclusion of Effective Dates for ToTV/uToTV flags to identify the date on which an instrument first became eligible for reporting.

DSB Decision (9th Aug 2017): The DSB had previously committed to (a) implement uToTV functionality on the above basis, subject to ongoing analysis to accurately determine uToTV for OTC derivatives with index underlying products and (b) to provide Effective Dates for DSB ToTV/uToTV flags to reflect the feedback received.

Update (20th Sep 2017): The DSB will provide uToTV indicators for index and basket products where an ISIN has been provided as the underlying instrument. As the DSB does not have access to publicly available constituent data it is unable to undertake a constituent level uToTV review for index or basket OTC Derivatives.

Additionally, the DSB's proposed model assumes a one to one mapping between ToTV criteria and the ISIN, in light of ESMA's ToTV opinion of May 2017[1]. That is because the ISIN is more granular than all the other reference data fields together and the OTC-ISIN Product Definitions have been carefully designed to guarantee a many-to-one relationship between the OTC-ISIN and the remaining RTS23 reference data fields specified by the ESMA ToTV opinion. Therefore, to optimize the process, the DSB

[1] https://www.esma.europa.eu/sites/default/files/library/esma70-156-117_mifir_opinion_on_totv.pdf?lipi=urn%3Ali%3Apage%3Ad_flagship3_pulse_read%3B2UW1B6S9T1S8RPucICSOSg%3D%3D

will be using the existence of an ISIN in FIRDS (for a valid MIC) as a proxy for determining the value of the ToTV/uToTV indicators and will not be performing a field by field matching of the other attributes specified in the ESMA opinion.

The DSB believes this is appropriate on the basis that the reference data for each ISIN will uniquely map to the relevant RTS23 fields 2-4 and 13-48 and therefore it is sufficient to compare only the ISIN value for the purpose of determining the ToTV flag. Any changes to this approach will need the DSB to revisit its technical architecture and may result in additional development effort and thus impact ToTV/ uToTV launch.

Update (9th October 2017): Following industry feedback, at creation of a DSB OTC ISIN uToTV will be set accordingly based on the underlier information. Providing uToTV information at the time of creation of an ISIN will require an incremental effort and cost involved. The estimated cost of providing uToTV at creation is €150K that is including 3 months' development effort and a one-off infrastructure cost. The running costs are estimated at €120K a year. **If no material feedback received to the contrary by 23 October 2017, the DSB will provide uToTV soon after DSB ISIN is created. The DSB is asking for the industry feedback by 23 October 2017.**

ToTV will be defaulted to False (based on the fact that the ISIN is not yet in FIRDS) until reconciled with FIRDS.

1.3.5 File Download timing

Several participants raised a concern about whether the file download provides ToTV information at a sufficient point in time for anyone using File Download as a single source of data of the ToTV information.

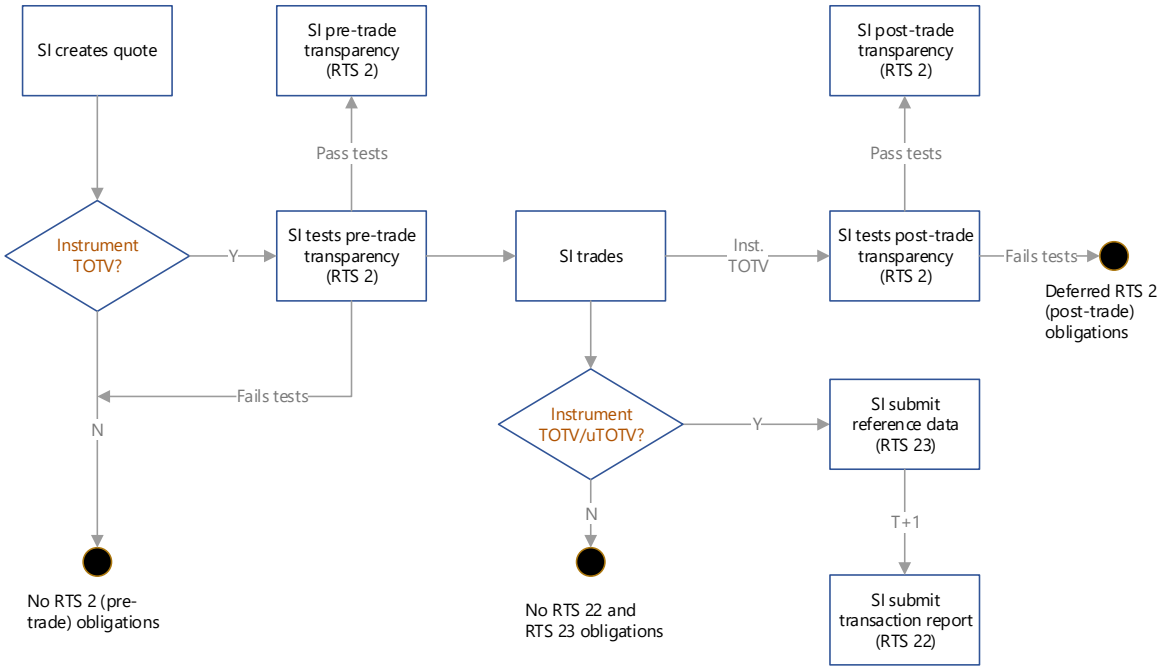
DSB Decision (9th Aug 2017): The DSB had committed to investigate the request, understand the impact on performance and the cost of making the file download available after the ToTV/uToTV flags have been computed.

Update (20th Sep 2017): Subject to industry demand in 2018, the DSB will perform analysis to determine whether additional file downloads can be made available on completion of the daily ToTV/ uToTV processing. This approach allows the DSB to limit the spectrum of changes required before January 2018 and to focus on delivery of the core ISIN functionality.

Update (9th October 2017): ToTV data will be available via File Download after the DSB has completed the daily processing of FIRDS files. For details, see 8.4

1.4 High Level Workflow

The diagram below is an example of one type of high level workflow for a Systematic Internalizer (SI) quoting and then trading an instrument, demonstrating some of the ways the ToTV flag might be used. This scenario is not to be treated as guidance or a comprehensive set of user workflows.



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.

1.5 Previously Open Issues

This section describes items what were previously marked as open issues requiring clarity.

1.5.1 uToTV for Instruments where underlying includes one or more indices

For instruments with one or more underlying indices, the DSB's uToTV flag will be set to "true" if and only an ISIN for the index/basket is provided as part of the DSB OTC ISIN record or available in the FIRDS Reference Data and the ISIN itself is traded on a trading venue.

Where an underlying instrument ISIN is not provided as part of the DSB OTC ISIN record or the underlying instrument ISIN is not available in the FIRDS Reference Data, the DSB will set the uToTV status as NULL to enable users to make their determination via other means. Where an underlying ISIN is provided, but was not itself traded on a trading venue, the DSB will set the uToTV status to False.

As the DSB does not have access to publicly available constituent data it is unable to undertake a constituent level uToTV review for index or basket instruments. Subject to industry demand in 2018, the DSB will investigate alternate data sources it could use to define a process to identify all indices that have at least one constituent that is ToTV in order to provide a broader range of uToTV indicators. Update (9th October 2017): Following industry feedback that indices are not financial instruments and cannot be traded in their own right, subsequently confirmed by ESMA, the DSB will determine uToTV for instruments with index underlying without having information about index constituents.

For proprietary indices, the DSB has agreed a workflow for authorised users to request adding a new proprietary Credit/Equities/Commodities indices to the DSB's enumerated lists. The users will be able to submit "Constituent ToTV" flag for proprietary indices to indicate that an index has at least one constituent that is traded on a European trading venue. The DSB will be using the "Constituent ToTV" flag to determine uToTV for instruments with underlying index or basket of indices. Due to the tight timeline for ToTV delivery, and the fact that the ToTV development began before the Proprietary indices workflow has been agreed, the flag will not be used in the uToTV determination at Day 1 and will be implemented as soon as practically possible. The timelines will be published at a later date.

For market indices, as stated above, subject to industry demand in 2018, the DSB will investigate ways to identify all indices that have at least one constituent that is ToTV in order to provide uToTV indicator.

In meantime, uToTV for instruments with underlying index will be set to False.

1.5.2 Single Name Credit Default Swaps with a LEI underlying

The DSB Product Committee has received regulatory direction that the only acceptable identifiers for CDS underlying instruments are ISINs or LEIs and that ESMA's expectation is that Trading Venues must ensure that all instruments admitted to trading or traded on their venue have an ISIN or LEI.

Consequently, the current product definition for Single Name CDS permits either an ISIN or an LEI as the underlying identifier.

In-line with regulatory direction, the DSB will execute the following:

- set the uToTV status to 'True' where an ISIN is provided as the underlying identifier AND it is reported to FIRDs by at least one trading venue
- set the uTOTV status to 'False' where an ISIN is provided as the underlying identifier AND it is reported to FIRDs by SI's only
- set the uToTV status to 'False' where an LEI is provided as the underlying identifier

1.6 Questions for Industry

In the previous version of this document,the DSB sought industry feedback on following key aspects:

1.6.1 Timing for provision of ToTV/MiFID II data

- Note (20th Sep 2017): The DSB will use FIRDS Reference Data files to set the ToTV/uToTV indicators and FIRDS Transparency files to determine Thresholds and Liquidity.
- The DSB will send to FIX subscribers the ToTV records that have changed during the day, once a day after all FIRDS files that were published before 9:00AM CET were processed.
- If a user requests a ToTV record before the DSB completes processing all FIRDS files, the DSB could either provide the resulting record that contains a 'current snapshot' (the data that was processed until the request time) or 'yesterday's' data when the last ToTV process was fully completed or not provide the ToTV record and indicate to request again later
- Subject to industry feedback to the contrary, the DSB proposes to provide the 'current snapshot' (the snapshot is accurate at the time of the request) and indicate that today's ToTV records are still being processed:

Update (9th October 2017):

- There will be two attributes in the header of the ToTV record (see section 8.1):
- The later of the last updated date of the DSB ISIN or the date of the FIRDS file that contributed to the ToTV record (LastModifiedDate).
- The last date when all FIRDS files were processed, it is only updated once the DSB has completed its processing for all the FIRDS files that were available by 9:00 CET. (LastCompletedProcessingDate)

LastCompletedProcessingDate < Today will indicate that today's ToTV records are still being processed. The DSB will send ToTV data to FIX subscribers once the ToTV processing has been completed (see the FIX API documentation here for details) and will make LastCompletedProcessingDate available on the GUI.

The DSB will process all files it receives from FIRDS by 9:00 CET at latest.

This is later in the document referred to as "FIRDS processing is complete for the day".

If there are any files that are received from FIRDS after 9:00 CET, they will be processed once the DSB has completed processing for the day and sent an update to FIX subscribers.

Worked example: This illustrates the date values during life cycle of a record.

Event	LastUpdateDateTime for ISIN record	LastModifiedDate of ToTV record	LastCompletedProcessingDate of FIRDS data	Comment
User creates a DSB ISIN on 16/07/17 at 10am	16/07/2017T10:00:000	16/07/2017	15/07/2017 or 16/07/2017 depends on whether the FIRDS files processing has been completed for the day	User may query ToTV record: ToTV =False uToTV =True/False
17/07/17 ISIN is processed within the FIRDS data	16/07/2017T10:00:000	17/07/2017	17/07/2017	FIX subscribers receive ToTV data once processing is complete
18/07/17 at 08am User queries ToTV for ISIN	16/07/2017T10:00:000	17/07/2017	17/07/2017	
18/07/17 at 10 pm User queries ToTV for ISIN	16/07/2017T10:00:000	17/07/2017	18/07/2017	There is no such ISIN in the FIRDS file on the 18/07

Update (9th October 2017): Following industry feedback, the DSB will provide uToTV data for an OTC DSB ISIN at creation, this will be near real-time. If the user queries ToTV data before the DSB has completed FIRDS processing for the day, the "current snapshot" will be provided and the DSB will utilise LastCompletedProcessingDate to indicate that the ToTV data have not been fully processed for the day.

1.6.2 Providing a complete FIRDS Reference Data record at the MIC level for both OTC and non-OTC ISINs

Note (20th Sep 2017): As requested by industry during the prior ToTV consultation, the DSB will provide ToTV/MiFID II information for non-OTC instruments at the MIC level to enable users to make their own determination.

- The DSB defines non-OTC products as those not issued by the DSB, but received as part of the FIRDS Reference and Transparency files that are processed.
  - Subject to industry feedback to the contrary, the DSB will provide a complete FIRDS Reference Data record for OTC instruments as part of the ToTV file in the same manner as for non-OTC ISINs.
  - For Transparency Data (LIS, SSTI, Liquidity), the DSB will provide non-equity transparency results only on day 1 as equity transparency information is already available from other sources as a result of MiFID I.
- The DSB will use FIRDS Reference Data to set the value of the ToTV/uToTV indicators and their Effective Dates
- FIRDS Reference Data are at the MIC level, i.e. if an ISIN is submitted by different reporting entities, its Reference Data might vary
- Where data from multiple MICs conflicts, the DSB will set the ToTV/uToTV indicators to True if it has been reported by at least one trading venue
- The estimated cost of providing this additional dataset is €80K to build the infrastructure (as a one off-cost) and €120K to run it on an annual basis[2].
- Subject to industry feedback to the contrary, the DSB proposes to make available a complete Reference Data record from FIRDS for OTC ISINs in the same manner as for non-OTC to give opportunity for the user to validate the FIRDS data and see which market is trading the instrument, date it was admitted to trading /traded on a market

Update (9th October 2017): In the absence of feedback, the DSB will make available a complete Reference Data record from FIRDS for all instruments.

1.6.3 Providing ToTV/uToTV as NULL until the instrument/underlying is in FIRDS Reference Data.

- Note (20th Sep 2017): The DSB will only provide ToTV/uToTV indicators for instruments that are in FIRDS Reference Data (as defined in 6.2)
- The DSB will only provide transparency data (Liquidity and LIS/SSTI Thresholds) for instruments that are in the FIRDS Transparency files (as defined in 6.3)
- If an ISIN is submitted to FIRDS Transparency Data for the 1st time before it is submitted to FIRDS Reference Data, the DSB can either

[2] Start-up costs are related to the build and UAT periods, are incurred in a staggered manner, require lower levels of resiliency, support and infrastructure vs. production; whilst run costs are incurred over a 12-month period based on 24*6 availability, resilient infrastructure, production support and higher data consumption levels.

  - delay providing its Transparency Data (Thresholds and Liquidity) until the ISIN is in the FIRDS Reference Data and the ToTV/uToTV flags can be derived
  - provide Transparency Data as it becomes available and have ToTV/uToTV flags as NULL
  - provide Transparency Data as it becomes available and have ToTV/uToTV flags as False
- Subject to the industry feedback to the contrary, the DSB proposes to set the ToTV/uToTV flags to NULL for any ISINs/Underlying ISINs that are not present in FIRDS Reference Data, and only present in the FIRDS Transparency Data

Update (9th October 2017): The DSB will provide Transparency Data as they become available. After further consideration and to align with the DSB's definition of ToTV/uToTV flags (see 4), any instruments/underlyings that are not yet in FIRDS Reference Data will have ToTV/uToTV set to False, i.e any instrument not reported to FIRDS Reference Data – is not traded on a venue at the time.

1.6.4 Key DSB assumptions (section 6)

- Note (20th Sep 2017): Industry is requested to highlight any information they are aware of that contradicts the assumptions underpinning the DSB's ToTV/ uToTV service.
- Update (9th October 2017): Following industry feedback, further details are added to clarify some of the DSB's key assumptions, please refer to section 6

1.6.5 The ToTV JSON record structure (section 8.1)

- Note (20th Sep 2017): Industry is asked to review the proposed JSON record structure and highlight concerns - with specific suggestions for improvement such that the DSB can consider and rapidly incorporate into the next version of the functional documentation.
- Update (9th October 2017): After further consideration, the ToTV JSON record structure is now revised, please see details in 8.1

2 Scope

2.1 Instrument Scope

Following Industry feedback, the DSB MiFID II Dataset service will be available for the full scope of instruments submitted to ESMA under MiFID II Article 27 / RTS 23 obligations to allow trading venues and systematic internalizers to submit reference data.

The DSB MiFID II Dataset service will be available for:

- all 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).
- non-OTC ISINs. The DSB defines non-OTC products as those not issued by the DSB, but received as part of the FIRDS Reference/Transparency Data files.
    - Subject to industry feedback to the proposal in section 0 above, the DSB will provide a complete FIRDS Reference Data record for non-OTC instruments as part of the ToTV file.
    - This includes but is not limited to Equities, Fixed Income, Listed Derivatives.
    - For Transparency Data (LIS, SSTI, Liquidity), the DSB will provide Non-Equity Transparency results only and will not provide Equity Transparency results for Day 1 (see 6.3).

2.2 MiFID II Dataset Scope

2.2.1 FIRDS Reference Data

The DSB will import all data points from the FIRDS Reference Data files as defined in section 2.3.4 of the following document: https://www.esma.europa.eu/sites/default/files/library/2016-1522_firds_reference_data_reporting_instructions.pdf

Once FIRDS goes live, The DSB will consider using the ANNA Service Bureau (ASB) as well as the DSB ISIN data to validate the FIRDS Reference Data attributes. Until then the DSB will make available all data from the FIRDS Reference Data files at the MIC level for both DSB and non-OTC ISINs as part of the ToTV JSON file, see section 8.1

The DSB will not process FIRDS Invalid Records file (INVINS) at Day 1 - see section 6.2. The need for processing this file will be assessed once FIRDS goes live and the data are available.

2.2.2 FIRDS Transparency Data

The DSB will import the following classifications, flags and thresholds from FIRDS Transparency Data on the basis these are available:

Transparency Data Attribute Name	Example Value
Reporting period	1/Jan/2018 - 31/Mar/2018
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

As defined in section 5.6.2.2 of the following document https://www.esma.europa.eu/sites/default/files/library/2016-1521_mifir_transaction_reporting_technical_reporting_instructions.pdf:

- The currency for LIS and SSTI thresholds is EUR.
- LIS and SSTI thresholds for Emission Allowances are expressed in tons of carbon dioxide.

For Transparency Data (LIS, SSTI, Liquidity), the DSB will provide Non-Equity Transparency results only and will not provide Equity Transparency results for Day 1.

2.2.3 DSB Derived Data

The DSB will derive the following key attributes:

Derived Attribute Name	Example Value
Traded on a Trading Venue	TRUE
ToTV Effective Date	2018-02-01
Underlying Traded on a Trading Venue	FALSE
uToTV Effective Date	2018-02-01

Following industry feedback, ToTV Effective Date and uToTV Effective Date will be stored as part of the ToTV record so that users can identify the date on which a trade first became eligible for reporting.

ToTV indicator is set to true if and only if at least one trading venue reported the instrument to FIRDS.

ToTV Effective Date will be the earliest Effective Date of all the ToTV Effective Dates that relevant Trading Venues reported to ESMA for an ISIN.

uToTV indicator is set to if and only if at least one trading venue reported one of the underlying ISINs to FIRDS.

uToTV Effective Date will be the earliest Effective Date of all the underlying ToTV Effective Dates that relevant Trading Venues reported to ESMA for an ISIN.

Note that the DSB will not be able to identify all instruments with underlying index/basket as uToTV as described in 1.5.1.

A new ToTV JSON template will be developed to hold MiFID II Dataset attributes, see 8.1. The JSON structure for DSB's ISIN requests and records will remain unaltered. Non-OTC ISINs will be available from the ToTV file only.

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, i.e. ToTV/MiFID II information will be kept in a separate JSON record.	Ongoing
1.3	Update ToTV Flag	For each ISIN, the system will update the ToTV flag. Note, this frequency will be equal to the rate at which FIRDS is updated.	Daily (=FIRDS Reference Data frequency)
1.4	Update uToTV Flag	For each ISIN, the system will update the uToTV flag	Daily (=FIRDS Reference Data frequency)
1.5	Update Transparency Data	For each ISIN, the system will update LIS/SSTI thresholds and Liquidity	Daily (=FIRDS Transparency Data frequency)
1.6	Instrument Expiry Update	The DSB will mark all OTC derivatives with Expiry Date < Today as having ISIN Status = Expired. The ToTV/uToTV flags will be left intact so that the users could retrieve the last ToTV status before the instrument expired. This is to be confirmed with the PC	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	Search by MiFID II Dataset	The MiFID II Dataset, including data for non-OTC ISINs, search by ISIN will be available at real-time and will include the most up-to-date snapshot of the record. Details will follow in the Search guide revised with ToTV changes. Search by attributes for ToTV will be available, but the data it contains will be yesterday's data until the FIRDS processing is complete for the day.	Ad-hoc
2.3	Updates on ToTV data to FIX subscribers	FIX users subscribing to updates from the DSB will receive the ToTV record once a day once the FIRDS processing was complete for the day.	Ongoing

4 ToTV/uToTV Proposed Solution

The DSB evaluated industry feedback on various alternative solutions before arriving at the proposal detailed below.

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

4.1 DSB's ToTV Flag

- If the instrument is in the FIRDS file and the MIC identifies an approved European trading venue, then the ToTV Flag will be set to True
- Approved European trading venues include EU regulated markets, Multilateral Trading Facilities (MTF) and Organised Trading Facilities (OTF).

4.2 ToTV Effective Date

- The ToTV effective date will be the earliest date among all the ToTV Effective Dates that Trading Venues reported to ESMA for a particular ISIN.
- The DSB will use the FIRDS "Date of Admission to Trading or Date of First Trade" attribute[3] to derive the ToTV effective date.

4.3 DSB's uToTV Flag

- DSB's uToTV flag will only be set for instruments with one or more Underlying ISIN
- 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 any of the underlying instruments is ToTV (as defined in section 4.1) then the instrument is uToTV
- Underlying reference data: For calculation of the uToTV flag, if the instruments' ISIN was issued by the DSB, the DSB will use the ISIN record underlying's ISINs. Otherwise, the DSB will use the FIRDS records underlying's ISINs. At a future date, it will be considered using the ANNA Service Bureau (ASB) data to calculate the uToTV flag for instruments having an ISIN non-issued by the DSB.
- Note that the DSB will not be able to identify all instruments with underlying index/basket as uToTV as described in 1.5.1.

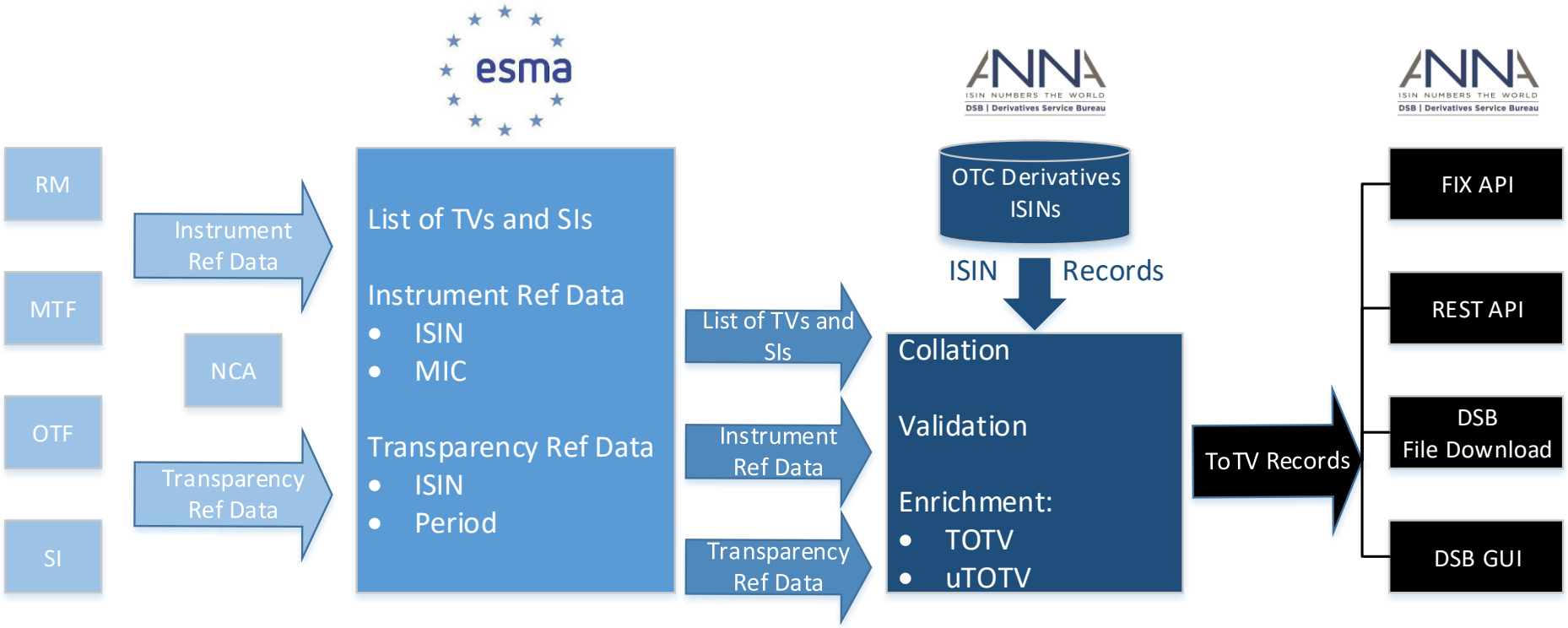
4.4 uToTV Effective Date

- The uToTV effective date will be the earliest Effective Date among all the underlying ToTV Effective Dates that Trading Venues reported to ESMA for a particular ISIN.

[3] As defined in section 2.3.4.2.11 https://www.esma.europa.eu/sites/default/files/library/2016-1522_firds_reference_data_reporting_instructions.pdf

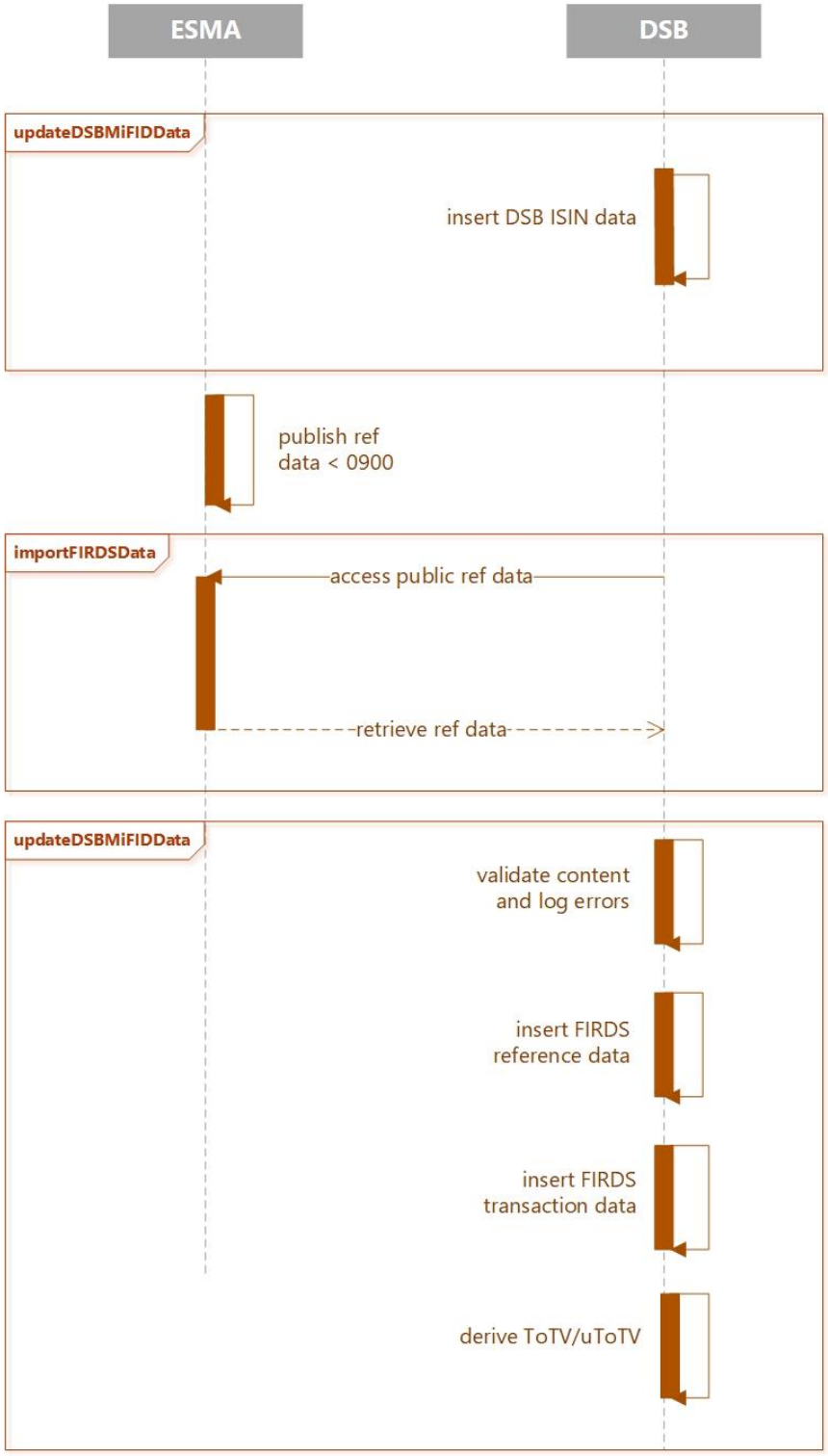
5 System Workflows

5.1 System Diagram



5.2 High-Level Create MiFID II Dataset

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



Step	Description
Insert DSB ISIN data	Daily, as an overnight process, the system copies across DSB ISIN Reference Data to MiFID II database to be collated with ESMA Reference/Transparency information once ESMA data are loaded
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 RTS 2 Thresholds and liquidity flag • 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 **Description** Daily, the system accesses ESMA's instrument reference data service. This must be executed as soon as ESMA publish their new set of data (<= 0900) **Constraints** The DSB will not provide MiFID II data for ISINs that are not in FIRDS
Retrieve reference data	**Assumptions** • FIRDS Reference Data are retrieved for ISIN, MIC and Reporting Date • FIRDS Transparency Data are retrieved for ISIN and Reporting Period **Description** The system imports the instrument reference data and updates the DSB cache of ESMA data.
Validate content and log errors	DSB validates integrity and structure of the FIRDS Reference and Transparency files and logs any errors.
Insert FIRDS Reference Data	Insert reference data from FIRDS Reference Data full/delta files
Insert FIRDS Transaction Data	Insert transaction data from FIRDS Non-Equity Transparency results

Step	Description
Derive ToTV/uToTV indicator values	Derive ToTV/uToTV flags and their effective dates **Assumptions** • DSB will have access to an up-to-date list of MICs for approved trading venues in the EU. The DSB will source the list from ESMA prior to running the FIRDS daily update. **Description** • If an instrument has been reported by at least one European trading venue, set the ToTV flag to TRUE in the DSB MiFID II Dataset. • For any instrument with an underlying ISIN, if at least one underlying is ToTV, the instrument will be marked as uToTV. • Note that the DSB will not be able to identify all instruments with underlying index/basket as uToTV as described in 1.5.1 • ToTV Effective Date will be set to the earliest Effective Date of all the ToTV Effective Dates that relevant Trading Venues reported to ESMA for a particular ISIN. • uToTV Effective Date will be set to the earliest Effective Date of all the underlying ToTV Effective Dates that relevant Trading Venues reported to ESMA for a particular ISIN.
Update DSB MiFID II Dataset with other ESMA specific data	**Assumptions** MiFID II Dataset attributes are in FIRDS as stated in the Attribute Scope section. **Description** Update the DSB MiFID II Dataset with all new values for the attributes stated in the Attribute Scope section.

5.3 State transitions ToTV/uToTV

A newly created DSB OTC ISIN will have uToTV flag set, but no other MiFID II data until the following day's FIRDS data are received.

1. DSB OTC ISIN created:
   - ToTV is False until the next day when the DSB starts processing FIRDS data.
   - uToTV is set to True/False accordingly:
     - Underlying ISIN – True if and only if Underlying ISIN has been reported to FIRDS by at least one TV. Otherwise - False
     - Underlying Index – False (see 1.5.1)
     - Underlying LEI – False (see 0)
     - No underlying - False

2. Daily Update from FIRDS:
   - ISIN/Underlying ISIN is in FIRDS Reference Data but have been reported by SI's only.

3. Daily Update from FIRDS:
   - ISIN/Underlying ISIN is the FIRDS Reference Data and it is reported by at least one Trading Venue.

4. Instruments marked ToTV/uToTV, remain flagged ToTV/uToTV

6 Key Constraints

6.1 Access to updated European MIC / SI list

The DSB expects to have access to up-to-date list of European trading venues and the associate types (MTF, OTF, RM) and SI's prior to running the daily update from FIRDS. The DSB will use this data to derive ToTV/uToTV flags. The DSB will rely on ESMA's MIC data, but will be looking to supplement it with industry feedback. At the moment, the DSB assumes that the above data for RM, MTF and SI's will be supplied in accordance with: https://registers.esma.europa.eu/publication/helpApp and the list of OTF will be supplied in a similar manner.

The DSB will develop a process to add MIC codes and associate the MIC types manually per DSB's power user requests and after appropriate validations.

6.2 FIRDS Reference Files

The following files are expected to be available in the public folder on ESMA website and contain up-to-date instruments as they are listed in the ESMA database:

File	File type	ISO 20022 message	Naming convention <Sender>_<FileType>_<Recipient>_<Key1>-<Key2>_<Year>.xml
Full file	FULINS	auth.017.001.01	FIRDS_FULINS_PUBLI_01Z02-000123_18.xml
Delta file	DLTINS	auth.036.001.01	FIRDS_DLTINS_PUBLI_01Z01-000123_18.xml
Invalid records file	INVINS	auth.042.001.01	FIRDS_INVINS_PUBLI_00001-000000_18.xml

It is expected that:

- The FIRDS Reference Data files will be available by 9:00 CET each calendar day and uploaded to the public folder once a day.
- The files will remain in the public folder for 10 days.
- The files will be compressed to .zip and for one compressed file to contain one xml file.
- All data could be in one file or split by multiple files.

It is assumed that:

- FIRDS Reference Data record is unique per ISIN and MIC for the reporting day.

6.3 FIRDS Transparency Files

The following transparency files are expected to be available to download from FIRDS:

File	File type	ISO 20022 message	Instruments coverage	DSB Scope
Non-Equity Transparency Results	DATNCR	auth.045.001.01	Non-equity as defined in RTS2 – Annex IV – Table 2: •Securitised derivatives •Structured Finance Products •Bonds •ETCs •ETNs •Emission Allowances •Derivative	In scope
Equity Transparency Results	DATECR	auth.044.001.01	Equity as defined in RTS1 – Annex III – Table 2: •shares •ETFs •depositary receipts •certificates •other equity-like financial instruments	Out of scope

The DSB requires information on download interface for FIRDS Transparency files, including file naming convention and connectivity protocol.

It is assumed that:

- ESMA provides access to the DARNCR files daily.
- FIRDS Transparency Data record is unique per ISIN for Reporting period.

6.4 FIRDS sample data format assumptions

As part of preparations for production, the DSB is assuming that a FIRDS sample will be made available in the second half of October 2017 which will allow the DSB to conduct a final analysis, reconfirm the expected dataset and understand if any revisions to the DSB's assumptions and/or data attributes are required. If FIRDS samples are not made available in time for the DSB to test its ToTV/uToTV determination process, the DSB will need to mock up data and that could have an impact on the ToTV delivery timelines.

6.5 ISIN being part of the ToTV definition

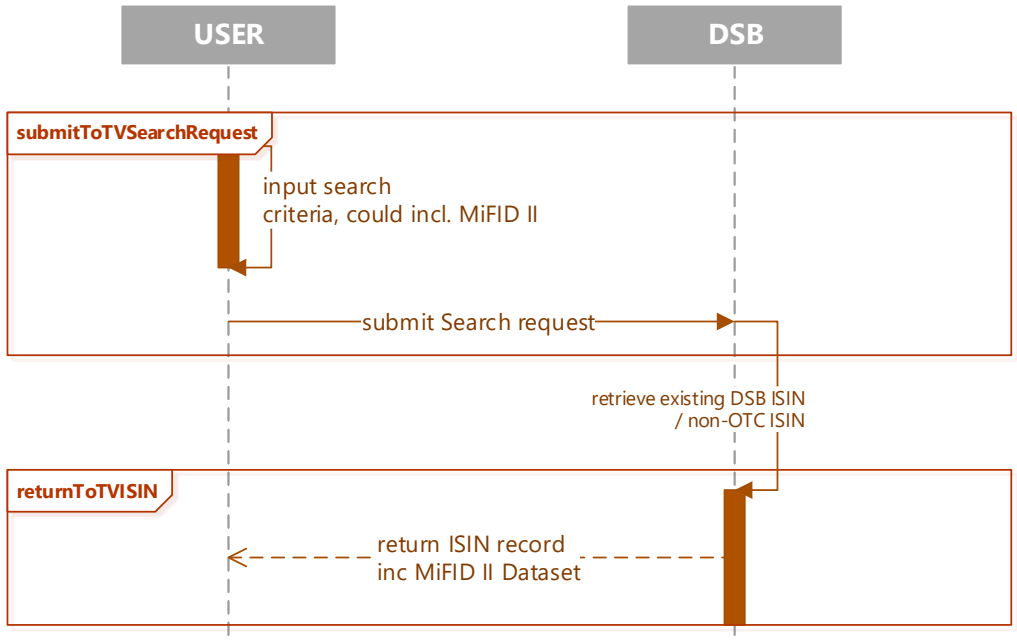
The DSB's proposed model assumes a one to one mapping between ToTV criteria and the ISIN, in light of ESMA's ToTV opinion of May 2017[4]. That is because the ISIN is more granular than all the other reference data fields together and the OTC-ISIN Product Definitions have been carefully designed to guarantee a many-to-one relationship between the OTC-ISIN and the remaining RTS23 reference data fields specified by the ESMA ToTV opinion. Therefore, to optimize the process, the DSB will be using the existence of an ISIN in FIRDS (for a valid MIC) as a proxy for determining the value of the ToTV/uToTV indicators and will not be performing a field by field matching of the other attributes specified in the ESMA opinion. The DSB believes this is appropriate on the basis that the reference data for each ISIN will uniquely map to the relevant RTS23 fields 2-4 and 13-48 and therefore it is sufficient to compare only the ISIN value for the purpose of determining the ToTV flag. Any changes to this approach will need the DSB to revisit its technical architecture and may result in additional development effort and thus impact ToTV/ uToTV launch.

[4] https://www.esma.europa.eu/sites/default/files/library/esma70-156-117_mifir_opinion_on_totv.pdf?lipi=urn%3Ali%3Apage%3Ad_flagship3_pulse_read%3B2UW1B6S9T1S8RPucICSOSg%3D%3D

7 User Workflows

7.1 ToTV Request

The below presents the steps the DSB will follow for a user requesting a ToTV/MiFID II information (via FIX, REST API or GUI)



Step	Description
Submit ToTV Search request	**Assumptions** • User submits syntactically valid search request **Description** The user runs search by attributes that can be a mixture of MiFID II attributes and core ISIN attributes or the ISIN Details will follow in a revised Search guide – on Github on 30 Oct 17.
Retrieve existing ISIN and MiFID data	**Description** The user submits search attributes and the DSB searches through the existing MiFID II records and retrieves any ISIN record where there is a match. Every ISIN record is returned with the MiFID II data points alongside it. If no ISIN records meet search conditions, "Zero results" message is returned.

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 JSON for MiFID II data

All MiFID II data will be provided in a JSON format valid to the DSB-totv.json schema which is available on ANNA-DSB GitHub. The updated ToTV timelines will be communicated as part of this document release.

The general structure of a record contains:

Name	Datatype Type	Required	Multiple	Notes
Header	Component	✓	×	
-| ISIN	ISIN	✓	×	String
-| LastModifiedDate	Date	✓	×	Format: YYYY-MM-DD
-| LastCompletedProcessingDate	Date	✓	×	Format: YYYY-MM-DD
-| CFI Category	Single Character	×	×	See below for the list of CFI categories and CFI groups
-| CFI Group	Single Character	×	×	
ISIN-DSB	Component	×	×	
-| record	JSON	×	×	The entire ISIN record as available in the DSB
FIRDS-RefData	Component	×	×	
-| MICType	MICType	×	✓	Market types are: • RM • MTF • OTF • SI

Name	Datatype Type	Required	Multiple	Notes
				• UNKNOWN
-| -| record	JSON	×	✓	The entire FIRDS reference data for the ISIN, MIC and for the last date it has changed in FIRDS
FIRDS-TransparencyData	Component	×	×	
-| -| record	JSON	×	×	The entire FIRDS transparency data for the ISIN and period
Derived	Component	✓	×	
-| ToTV	Boolean	✓	×	See section "Derived Data" above.
-| ToTV-EffectiveDate	Date	×	×	
-| uToTV	Boolean	✓	×	
-| uToTV-EffectiveDate	Date	×	×	

Note: In the above table, -| stands for nesting within the JSON record.

8.1.1 CFI Categories and Groups

CFI Category	CFI Group	CFI letters
Equities	Common/ordinary shares	ES
Equities	Preferred/preference shares	EP
Equities	Common/ordinary convertible shares	EC
Equities	Preferred/preference convertible shares	EF
Equities	Limited partnership units	EL
Equities	Depositary receipts on equities	ED
Equities	Structured instruments	EY
Equities	Others (miscellaneous)	EM
Collective investment vehicles	Standard (vanilla) investment funds/mutual funds	CI
Collective investment vehicles	Hedge funds	CH
Collective investment vehicles	Real estate investment trusts (REIT)	CB
Collective investment vehicles	Exchange traded funds (ETF)	CE
Collective investment vehicles	Pension funds	CS
Collective investment vehicles	Funds of funds	CF
Collective investment vehicles	Private equity funds	CP
Collective investment vehicles	Others (miscellaneous)	CM
Debt instruments	Bonds	DB
Debt instruments	Convertible bonds	DC
Debt instruments	Bonds with warrants attached	DW
Debt instruments	Medium-term notes	DT
Debt instruments	Money market instruments	DY
Debt instruments	Structured instruments (capital protection)	DS
Debt instruments	Structured instruments (without capital protection)	DE
Debt instruments	Mortgage-backed securities	DG
Debt instruments	Asset-backed securities	DA
Debt instruments	Municipal bonds	DN
Debt instruments	Depositary receipts on debt instruments	DD
Debt instruments	Others (miscellaneous)	DM
Entitlement (rights)	Allotment (bonus) rights	RA
Entitlement (rights)	Subscription rights	RS
Entitlement (rights)	Purchase rights	RP
Entitlement (rights)	Warrants	RW
Entitlement (rights)	Mini-future certificates, constant leverage certificates	RF
Entitlement (rights)	Depositary receipts on entitlements	RD
Entitlement (rights)	Others (miscellaneous)	RM
Listed options	Call options	OC
Listed options	Put options	OP
Listed options	Others (miscellaneous)	OM
Futures	Financial futures	FF
Futures	Commodities futures	FC
Swaps	Rates	SR
Swaps	Commodities	ST

CFI Category	CFI Group	CFI letters
Swaps	Equity	SE
Swaps	Credit	SC
Swaps	Foreign exchange	SF
Swaps	Others (miscellaneous)	SM
Non-listed and complex listed options	Rates	HR
Non-listed and complex listed options	Commodities	HT
Non-listed and complex listed options	Equity	HE
Non-listed and complex listed options	Credit	HC
Non-listed and complex listed options	Foreign exchange	HF
Non-listed and complex listed options	Others (miscellaneous)	HM
Spot	Foreign Exchange	IF
Spot	Commodities	IT
Forwards	Rates	JR
Forwards	Commodities	JT
Forwards	Equity	JE
Forwards	Credit	JC
Forwards	Foreign exchange	JF
Forwards	Others (miscellaneous)	JM
Strategies	Rates	KR
Strategies	Commodities	KT
Strategies	Equity	KE
Strategies	Credit	KC
Strategies	Foreign exchange	KF
Strategies	Mixed assets	KY
Strategies	Others (miscellaneous)	KM
Financing	Loan-lease	LL
Financing	Repurchase agreements	LR
Financing	Securities lending	LS
Referential instruments	Currencies	TC
Referential instruments	Commodities	TT
Referential instruments	Interest rates	TR
Referential instruments	Indices	TI
Referential instruments	Baskets	TB
Referential instruments	Stock dividends	TD
Referential instruments	Others (miscellaneous)	TM
Others (miscellaneous)	Combined instruments	MC
Others (miscellaneous)	Other assets (miscellaneous)	MM

8.2 GUI Access

The DSB will develop a new ToTV search. The ToTV search will run against MiFID II Dataset and will return MiFID II data alongside the ISIN record.

8.3 ReST and FIX Access

Details on ToTV/MiFID II changes to FIX and REST API can be found on GitHub:

- DSB FIX API 3.01 RC1 https://github.com/ANNA-DSB/FIX/blob/ToTV/docs/DSB%20FIX%20API.pdf
- DSB REST API 3.00 RC1 https://github.com/ANNA-DSB/ReST/blob/master/docs/DSB%20REST%20API.pdf

Note that changes in the MiFID II Dataset values will trigger an update record to FIX subscribers, with a record updated on completion of the DSB's ToTV/ uToTV process. See in 1.6.1 Questions to Industry.

8.4 File Download

Access to ToTV/uToTV and associated MiFID II Dataset attributes will also be available via the existing file download capability.

Any ISINs that have been created/updated today, will be accessible from File Download the following day. The DSB will change the file download folder structure to introduce a new section for ToTV as follows:

https://uat.anna-dsb.com/file-download/totv/

https://uat.anna-dsb.com/file-download/json_schema/totv-product-definitions

File Download for ToTV data will be available after the DSB has completed processing of FIRDS data for the day.

9 Availability

Apart for planned service interruptions, the system will operate 7 days per week and 24 hours per day, receiving and generating reference data every day.

Support will be available during DSB working days and hours. If an incident occurs on a non-working day / outside of DSB working hours, it should be analysed on the next working day and handled per the DSB support processes.

10 Performance

The DSB's best estimate for number of FIRDS daily records is 8 million. The system must be able to support collection, processing and publication of 8 million valid instrument records daily.

11 FAQ

1. *What happens if an investment firm requests an ISIN and ToTV is not set as the instrument is not traded on a venue, then a week later a trading venue requests an ISIN for that instrument will the ToTV Flag be set immediately?*
    - The DSB's ToTV status will be set to False at ISIN creation until the next time the FIRDS data are processed.
    - If the ISIN is not present in the FIRDS Reference Data the next day or has been reported by SI's only, the ToTV flag will remain set to False.
    - If the ISIN has been reported by at least one trading venue, the ToTV flag will be set to True

2. *If an investment firm requests an ISIN (and it is a brand-new instrument) and provides in the input the underlying's ISIN/LEI will DBS set the uToTV flag immediately?*
    - The DSB will only set the uToTV indicator for instruments with Underlying ISIN.
    - If Underlying ISIN has been marked as ToTV (had been previously reported to FIRDS by at least one trading venue), the DSB will set the uToTV flag at creation (near real-time).
    - If Underlying LEI or Underlying Index or no Underlying instrument was provided, uToTV will be set to False.Other MiFID II data will be set in the next processing date. As stated in 1.3, providing uToTV information at the time of creation of an ISIN will require an incremental effort and cost involved.

3. *How will DSB determine uToTV for XSNOREFOB underlying products i.e. credit derivatives where an LEI is provided as the underlying instrument rather than an ISIN?*
    - Please refer to section 0 above

4. *Has any progress been made on identifying a source to determine whether an Index is uToTV?*
    - Please refer to section 1.5.1 above

5. *Does the DSB know if there is still a mismatch between ISIN attributes and RTS 23 for Strike Price and Fixed Rate? How will ToTV be determined if Strike Price is not included in the ISIN but is included in RTS 23?*
    - As described in section 6.5, the DSB is assuming a 1 to 1 mapping for ToTV granularity to ISIN. If ISIN has been reported to FIRDS by at least one European trading venue, it will be marked as ToTV.

6. *How to request ToTV data? Currently we are using FIX protocol for requesting new ISINs, and for each type of product there is separate JSON schema for request and response. For ToTV there is just one JSON schema in GitHub, and it is not clear how to use it. Can you provide an example of request and response, similar to those you have in documentation for ISIN requests?*

   - The DSB will provide an example of ToTV request and response once we receive a sample of FIRDS data from ESMA.

7. *What is the fee structure for the TOTV/ uTOTV service?*

   - There is no additional charge for this service as it has been factored into the cost recovery fee base of the DSB. Please refer to the final fee model report.

8. *As the ToTV status could also be inherited from other instrument sharing the same attributes, we were wondering if you are going to search the MIC of all instrument sharing the same RTS 23 attributes of the submitted instrument, or solely the ISIN.*

   - The DSB will be using the existence of an ISIN in FIRDS (for a MIC) to determine the value of ToTV/uToTV and will not be looking at instruments sharing the same RTS23 attributes.

9. *Please include the possible combinations of Asset Class and Instrument Type in the final ToTV specifications.*

   - The DSB has CFI to Asset Class and Instrument Type mapping for OTC instruments only. There is no such mapping for non-OTC instruments.
   - The DSB is looking to provide an option for the users to indicate the first two characters of the CFI code when subscribing to ToTV data. For the possible combinations of CFI char#1 and char#2, see 8.1.1

10. *Please specify the attribute names that will be part of FIRDS Transparency Data record*

    - Fields will match the ESMA attribute names as appear in 'DATNCR' XML schema. The DSB is not looking to break down the FIRDS-TransparencyData component in the ToTV JSON record and this will be the exact copy of FIRDS Non-Equity transparency file record

11. *Could you please include the following attributes, as per the initial specifications?*

    On FIRDS Flag

    - OnFIRDS flag was part of the ToTV record in the earlier version of the ToTV/uToTV requirements document. It was meant to indicate ISINs that are in FIRDS but have been submitted by SI's only. The current view is to provide all data from FIRDS Reference Data including MIC Type, so that ISINs provided by SI's only will be available in the ToTV record and OnFIRDS flag is no longer needed.

Liquidity Flag

- Liquidity flag is part of the FIRDS-TransparencyData component.

12. Since M2 information is sent at MIC level, should we expect multiple ToTV records per ISIN

- There will be one ToTV record per ISIN that will contain FIRDS Reference Data component and all reference data from FIRDS will be nested within it on a per MIC basis.

13. As per ToTV JSON spec, at least one value will be sent in RM, MTF, OTF, SI tags; Is one ISIN allowed to be traded in RM, MTF, OTF and SI at the same time?

- MIC Type is optional and will only be populated if there are FIRDS Ref Data for it. One ISIN can be traded by multiple venues, please refer to ToTV JSON

14. Can an ISIN have multiple SI values?

- Yes, if traded by multiple SI's.

15. What's the difference between ISIN tag in the header versus DSB-ISIN tag?

- ISIN tag in the header contains ISIN only whereas ISIN-DSB is a component that holds the entire ISIN record as available in the DSB.

16. *Would DSB-ISIN object contain the entire OTC ISIN record created by DSB?*

- Yes, the ToTV record contains the entire DSB-ISIN.

17. Could you provide the End to End timings of file deliveries for ToTV/uToTV data service from ESMA->DSB->Investment Firm?

- The DSB derives ToTV/uToTV flags based on data from FIRDS that are expected to be available daily by 9 CET at latest.
- In the absence of FIRDS samples and seeing real daily volumes, it is difficult to predict with certainty how long it will take to complete processing of ALL files from FIRDS for the day.
- FIX subscribers will receive MiFID II data once the DSB finishes processing of all FIRDS data for the day. In addition, File Download for ToTV data will be available minutes after the FIRDS processing is completed for the day.

18. Could you share with us any FIRDS sample or mocked up data for ToTV/uToTV determination?

- Once the DSB has FIRDS samples or mocked up data, we will oblige industry requests to share the data.

19. How can users receive the MiFID II dataset?

- The users can access the MiFID II dataset via the existing APIs for ISIN. Please refer to FIX API and REST API documentation. Also, MiFID II dataset will be available in File Download, see 8.4.

20. How can users access the 'MiFID II Dataset' for non-OTC data?

- As for OTC ISINs, via the existing API.

21. What can we expect in relation to data being 'at the MIC level'?

- If an ISIN has been traded on multiple venues, it will have reference data duplicated as many times as there are venues that have reported it

12 Appendix

12.1 Sources of Data for ToTV/uToTV Determination

The DSB has considered several options for sourcing the data for ToTV / uToTV determination:

12.1.1 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.

12.1.1.1 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

12.1.2 Source 2 – Utilize Post-trade disclosure data

Collate APA and trading venues published post-trade data and combine the information in real-time to drive ToTV for all DSB OTC ISINs.

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.

12.1.2.1 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.

12.1.3 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.

12.1.3.1 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.

12.2 Asset Class ToTV Attributes

Below are the sets of attributes for each asset class that ESMA opinion defines as Traded on a Trading Venue (section 6.5).

12.2.1 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
Underlying instrument ISIN	26
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

12.2.2 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

12.2.3 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

12.2.4 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
Strike Price	31
Option Exercise Style	33
Delivery type	34

12.2.5 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