DSB ToTV current operating model

Author: Derivatives Service Bureau
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Contents

Preface

Change History

Date	Change	Version	Author	Revision Details
2 November 2018	Creation	0.1	Natalia Kozlovich	
21 January 2019	Update	0.2	Natalia Kozlovich	Updated sections 2.2.2 and 5.4

1 Glossary of Terms

Below is a list of terms where acronym details or definitions have been provided:

CFI	Classification of Financial Instrument according to ISO 10962.
DSB	Derivatives Service Bureau.
ISIN	International Securities Identification Number (ISO 6166 ISIN).
Regulated Market (RM)	A multilateral system operated by and/or managed by a market operator, which brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments in a way that results in a contract.
MTF	Multilateral Trading Facility – a non-exchange financial trading venue that facilitates the exchange of financial instruments between third parties in a way that results in a contract.
OTF	Organized Trading Facility – multilateral system which is not an RM or an MTF and in which multiple third-party buying and selling interests in bonds, structured finance products, emission allowances or derivatives are able to interact in the system in a way that results in a contract. Unlike RMs and MTFs, operators of OTFs will have discretion as to how to execute orders, subject to pre-transparency and best execution obligations.
Systematic Internaliser (SI)	An investment firm which, on an organized, frequent, systematic and substantial basis, deals on its own account by executing client orders outside a regulated market, an MTF or an OTF without operating a multilateral system.
Trading Venue	A regulated market, an MTF or an OTF.
ESMA	European Securities and Markets Authority.
FIRDS	Financial Instruments Reference Data System is a data collection infrastructure established by the European Securities and Markets Authority (ESMA), in cooperation with the EU competent national authorities (NCAs).

2 Introduction

2.1 Document Purpose

The purpose of this document is to provide an overview of the current operating model of DSB's Traded on a Trading Venue (ToTV) and underlying Traded on a Trading Venue (uToTV) service. This document aims to detail the current scope of the service and to describe how ToTV and uToTV flags are determined, as well as to give an overview on data sources and workflows in place to construct a DSB's ToTV record.

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 of the ToTV and uToTV flags.

2.2 Background

In addition to the DSB's core service of issuing ISINs for OTC derivatives, the DSB introduced a supplementary service to assist the users with identifying instruments that are Traded on a Trading venue (ToTV) and those that have an underlying instrument that is Traded on a Trading Venue (uToTV). The ToTV/uToTV service was released to the DSB's Production environment in July 2018.

The DSB downloads FIRDS Reference Data and FIRDS Transparency Data (published by ESMA) and makes this data available alongside the ISIN. The DSB provides this service so that users can access both ISIN and associated FIRDS information from a single source.

The DSB should not to be treated as a golden source for ToTV or uToTV data but should be considered as one input into a multi-factor determination made by each user. This is important as:

- The DSB's initial implementation of ToTV uses only FIRDS data to set the ToTV/uToTV indicators and ESMA has stated that FIRDS should not be used as the Golden Source.
- The DSB does not provide ToTV/uToTV flags for ISINs that are not in FIRDS.
- FIRDS data is only available on 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 18:00 CET on T+0 do not need to be reported to ESMA on the same day which means, potentially, there will be products that are ToTV but will not be treated as such until T+2.
- Pending clarification from ESMA[1], the DSB's current implementation of ToTV does not provide the ToTV indicator for OTC derivatives nor the uToTV flag for instruments where all Underlying ISINs are OTC derivatives.
- The DSB does not have sufficient information to determine uTOTV flag when all underlying instruments are either an Index/Reference Rate or an LEI or a basket of non-ISIN values[2].
- The DSB only sets ToTV/uToTV flags for instruments that have been reported to FIRDS and does not set the flags to derivatives based on them being subject to the Trading Obligation

[1] Following ESMA's update at the DSB's webinar on 17 November 2017, further guidance is expected to provide additional clarification on ToTV for OTC derivatives, specifically if ISIN can be categorised as part of the ToTV definition.
[2] See 2.2.2.

where ESMA classified a subset of fixed-to-float IRS and CDS indices as sufficiently liquid and subject to on-venue trading.

2.2.1 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[3]. 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 is using the existence of an ISIN in FIRDS (for a valid MIC) as a proxy for determining the value of the ToTV/uToTV flags and is not 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.

2.2.2 uToTV for instruments with an Underlying Index/Reference Rate/LEI

The DSB provides uToTV indicators for instruments where an ISIN has been provided as the underlying instrument. If an instrument only has non-ISIN underlying identifiers, the uToTV flag will be set to False. A non-ISIN underlying identifier could be:

- An Underlying Index
- A Reference Rate
- An LEI

As the DSB does not have access to publicly available constituent data (instruments that make up an index), it is unable to undertake a constituent level uToTV review for index instruments.

With respect to support for uToTV functionality for derivatives with proprietary index underlying products, the DSB will continue to monitor industry demand and progress accordingly.

2.2.3 European or equivalent countries reporting data to FIRDS

The DSB's current approach in ToTV determination is to rely on FIRDS policing EU or equivalent countries reporting data to FIRDS, i.e. it is implied that if a MIC reports data to FIRDS and the data is then published in the FIRDS Reference Data, then the MIC is deemed to be European or equivalent.

Currently there are 14 MICs in the DSB's database that are identified as RM/MTF/OTF/SI but with an ISO Country from outside of the EEA. Currently none of the 14 MICs has been reporting data to FIRDS, but in the event that any of the 14 MICs do report to FIRDS then the DSB would mark reported instruments as ToTV given it is reported by an RM/MTF/OTF. The DSB does not take into consideration the country the MIC is incorporated/domiciled. For the list of MICs outside EEA, see 0.

On the same note, if the UK leaves the European Union without a 'deal' (i.e. a hard Brexit) then the DSB will be relying on FIRDS that no new instruments from UK venues continue to be published by

[3] 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

FIRDS. Therefore, after Brexit if there are still data from UK venues that is published by FIRDS, the DSB will potentially mark those instruments as ToTV.

2.2.4 Invariability of FIRDS data

It is assumed that data published by FIRDS will never change, i.e. there is no workflow in FIRDS to publish a correction, e.g. a file named DLTINS_20180818_01of07 published on 20180818 cannot be published on a later date with different data. In line with this assumption, the DSB does not have a workflow to update data if FIRDS was to publish an update to a file that has already been published before.

3 DSB's ToTV/uToTV service scope

The DSB provides ToTV records for both OTC derivatives issued by the DSB and non-OTC derivatives sourced from ESMA. 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 by the DSB.

The DSB applies the following rules to OTC Derivative instruments where the ISIN reported to FIRDS was issued by the DSB:

- For instruments within the scope of the ESMA opinion published in May 2017, the DSB ToTV flag is set to False pending further clarification from ESMA about the specific attributes that determine ToTV[4].
- The DSB uToTV flag is set to True if one or more of the underlying instruments are non-OTC derivatives and at least one of which has been reported to FIRDS by a DSB recognized RM/ MTF/ OTF.
- The DSB uToTV flag is set to False in any of the following scenarios:
    a. the underlying is an OTC derivative;
    b. the underlying ISIN has not been reported to FIRDS by a DSB recognized RM/ MTF/ OTF,
    c. the underlying instrument is an index or reference rate,
    d. an LEI underlying is an LEI,
    e. the underlying instrument is a basket containing non-ISIN values.

The DSB applies the following rules to non-DSB ISINs:

- The DSB ToTV flag is set to True where the instrument was reported to FIRDS by a DSB recognized RM/ MTF/ OTF.
- The DSB uToTV flag is set to True where one or more of the non-OTC derivative underlying ISINs has been reported to FIRDS by a DSB recognized RM/ MTF/ OTF.
- The DSB uToTV flag is set to False in all other scenarios.

Please refer to the matrix below for a summary of the DSB's flag setting process:

[4] See 20.

Instrument ISIN	Underlying Type	DSB ToTV flag	ToTV Effective Date[5]	DSB uToTV flag	uToTV Effective Date[5]
EZ ISIN[1]	No underlying applicable	False - pending clarification from ESMA	Not on the ToTV record	False	Not on the ToTV record
EZ ISIN	• Index/Reference rate • LEI • Basket of non-ISIN values	False - pending clarification from ESMA	Not on the ToTV record	False as the DSB does not have sufficient information to decide	Not on the ToTV record
EZ ISIN	Underlying ISIN(s): • Underlying ISIN(s) are all EZ ISIN	False - pending clarification from ESMA	Not on the ToTV record	False - pending clarification from ESMA	Not on the ToTV record
EZ ISIN	Underlying ISIN(s): • At least one Underlying ISIN is a non-EZ ISIN that has been reported to FIRDS by a DSB recognised RM/ OTF/ MTF	False - pending clarification from ESMA	Not on the ToTV record	True	• The earliest date of the ToTV Effective Dates that trading venues reported the Underlying ISIN to ESMA • The DSB uses the FIRDS "Date of Admission to Trading or Date of First

[5] ToTV/uToTV Effective Date identifies the date on which an instrument first became eligible for reporting.

Instrument ISIN	Underlying Type	DSB ToTV flag	ToTV Effective Date[5]	DSB uToTV flag	uToTV Effective Date[5]
					Trade" attribute[2] to derive the ToTV effective date
Non-EZ ISIN that has been reported to FIRDS by a DSB recognised RM/OTF/MTF	No underlying applicable	True	• The earliest date of the ToTV Effective Dates that trading venues reported the Instrument ISIN to ESMA • The DSB uses the FIRDS "Date of Admission to Trading or Date of First Trade" attribute to derive the ToTV effective date	False	Not on the ToTV record
Non-EZ ISIN that has been reported to FIRDS by an SI(s) or reporting MIC is unknown	No underlying applicable	False	Not on the ToTV record	False	Not on the ToTV record
Non-EZ ISIN that has been reported to	• Index/Reference rate • LEI	True	• The earliest date of the ToTV Effective Dates	False as the DSB does not have	Not on the ToTV record

Instrument ISIN	Underlying Type	DSB ToTV flag	ToTV Effective Date[5]	DSB uToTV flag	uToTV Effective Date[5]
FIRDS by a DSB recognised RM/OTF/MTF	• Basket of non-ISIN values		that trading venues reported the Instrument ISIN to ESMA • The DSB uses the FIRDS "Date of Admission to Trading or Date of First Trade" attribute to derive the ToTV effective date	sufficient information to decide	
Non-EZ ISIN that has been reported to FIRDS by a DSB recognised RM/OTF/MTF	Underlying ISIN(s): • Underlying ISIN(s) are all EZ ISIN	True	• The earliest date of the ToTV Effective Dates that trading venues reported the Instrument ISIN to ESMA • The DSB uses the FIRDS "Date of Admission to Trading or Date of First Trade" attribute to derive the ToTV effective date	False- pending clarification from ESMA	Not on the ToTV record
Non-EZ ISIN that has been reported to FIRDS by a DSB	Underlying ISIN(s): • At least one Underlying ISIN is a non-EZ ISIN that has been reported to FIRDS	True	• The earliest date of the ToTV Effective Dates that trading venues reported the	True	• The earliest date of the ToTV Effective Dates that trading venues reported the

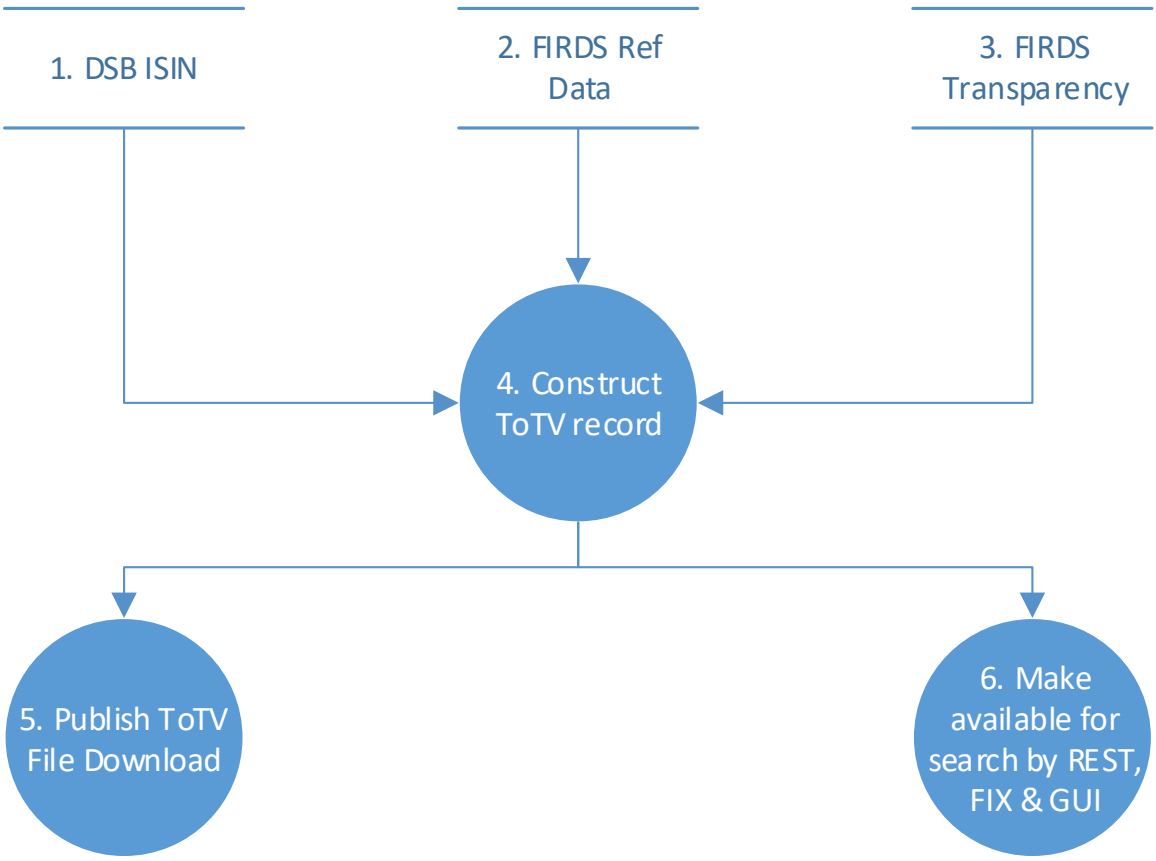
Instrument ISIN	Underlying Type	DSB ToTV flag	ToTV Effective Date[5]	DSB uToTV flag	uToTV Effective Date[5]
recognised RM/OTF/MTF	by a DSB recognised RM/ OTF/ MTF		Instrument ISIN to ESMA • The DSB uses the FIRDS "Date of Admission to Trading or Date of First Trade" attribute to derive the ToTV effective date		Underlying ISIN to ESMA • The DSB uses the FIRDS "Date of Admission to Trading or Date of First Trade" attribute to derive the ToTV effective date

[1] DSB-issued ISIN

[2] 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

The information in this section could also be found at https://www.anna-dsb.com/totv-utotv/ .

4 ToTV workflow



1. When an ISIN is created in DSB Production environment, it is saved in the ToTV database in Production real-time. This allows for the immediate provision of the uToTV flag for a newly created ISIN, i.e. if an instrument underlying has already been reported to FIRDS Reference Data then the uToTV flag can be set real-time.
   1a. ISINs created in the DSB UAT environment have no ToTV records, instead ISINs created in DSB Production are loaded in the ToTV UAT database overnight. For more details about the DSB-ISIN component of the ToTV record, see 6.1.2.
2. The DSB searches for Reference Data files made available by ESMA at https://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_firds_files. Any DLTINS and FULINS files made available before 9:00am CET will be included in the current day's ToTV folder. More details about the Reference Data files can be found here.
   Every file is downloaded and parsed, the content is validated, and any errors are logged. All successfully validated records are saved in the ToTV database. FIRDS Reference Data is retrieved for ISIN, MIC and Reporting Date. The data is aggregated by MIC, i.e. only the last submission of an ISIN by a MIC is made part of the ToTV record.
3. The DSB searches for Transparency files made available by ESMA at https://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_fitrs_files. Any DLTNCR and FULNCR files made available before 9:00am CET will be included in the current day's ToTV folder. More details about the Transparency files can be found here. Every file is downloaded and parsed, the content is validated, and any errors are logged. All successfully validated records are saved in the ToTV database. FIRDS Transparency Data is

retrieved for ISIN and Reporting Period. Some of the reporting periods might not be current and will be filtered out. More details on reporting periods can be found in 6.1.4.

4. At 9:00am CET, the DSB starts constructing ToTV records for the current day using the data stored in the ToTV database. The process is as follows:
   - Join DSB ISIN, FIRDS Ref Data and FIRDS Transparency
   - Derive ToTV and uToTV data. (More details on business rules for the ToTV/uToTV flags can be found here.)
   - Format the ToTV record in JSON format.
5. The DSB publishes the ToTV File Download for the current day.
   - The current day's ToTV folder includes DSB ISINs that were created in Production on the previous day and any data made available by FIRDS before 9:00am CET.
   - Any FIRDS data that is made available after 9:00 CET is included in the next day's ToTV folder, e.g. if the 20181003 FIRDS file is made available after 9:00CET on the 20181003, or before 9:00am CET on 20181004, then the information will be placed in 20181004 ToTV folder.
   - The ToTV File Download data are different in Production and UAT:
     - ToTV File Download in UAT only includes Production ISINs created on the previous day, whereas In Production, it also includes ISINs created before 9:00am CET on the current day.
     - ToTV File Download in UAT is constructed after ToTV File Download in Production is made available. If there are any data published by FIRDS later 9:00 CET and before the UAT ToTV File Download formation is started, the UAT File Download will have more data in the current's day files whereas those will go in ToTV File Download in Production the next day.
   - For more details about timeliness of the data, see7.
6. The DSB makes the current day ToTV records available for search via REST, FIX and GUI users.
   - Users are advised to utilise LastCompletedProcessingDate which indicates the date when the DSB last downloaded all FIRDS data. LastCompletedProcessingDate is common across any ToTV records at the time of a ToTV enquiry. If LastCompletedProcessingDate is not today's date, this means that the DSB has not downloaded all FIRDS data for the current day. If any instrument has been reported in any of the current day's FIRDS files by a venue for the first time, then the ToTV flag will not be set to True.

5 ToTV data sources

The ToTV engine takes data from the following sources:

- Financial Instruments Reference Files
- Transparency Files
- DSB ISIN data
- MIC TV/SI list

5.1 Financial Instruments Reference Files

Financial Instruments Reference Files are made available by ESMA. There are two types of files:

- Delta files that contain all records for which a change has occurred (addition, modification, deletion) since the generation of the last set of files. Normally Delta files are available daily.
  Example: DLTINS_20180818_01of07.zip, DLTINS_20180818_02of07.zip

- Full files that contain a snapshot of all Reference Data for instruments listed in the ESMA database. Available weekly, normally every Saturday.
  Example: FULINS_C_20180818_01of01.zip, FULINS_D_20180818_01of04.zip

The files are compressed to ZIP and one compressed file contains one XML file. The files are split by 500,000 records each or by the first letter of the CFI code in case of Full files, resulting in multiple files per day.

XML Schema: https://www.esma.europa.eu/sites/default/files/library/2016-_annex_6_firds_reference_data_xml_schema.zip

According to FIRDS Instructions on access and download of reference data files the timing of publishing is:

- Full File –Sunday morning by 09:00 CET;
- Delta File – every morning by 09:00 CET.

The DSB uses 09:00 CET as a cut-off time for the daily ToTV file generation and all data made available before 09:00 CET will be in the current day's ToTV folder. Anything made available after the cut-off will be processed the next day.

If a Reference Data file is published several days after the date stated in the filename, the data will be included in the ToTV folder on the day it is made available if this is before the cut off time of 9:00 CET.

When a MIC has submitted an instrument multiple times, the DSB will hold only the last submission. Data from delta files (DLTINS) will always override the content of the Reference Data record for any given ISIN and MIC. Data from a weekly full file (FULINS) is only added for new submissions that have never been reported in a delta or another full file.

Instructions on how to access and download full and delta reference data files can be found here.

The DSB makes available all data from the FIRDS Reference Data files at the MIC level for both DSB issued and non-DSB ISINs as part of the ToTV JSON file.

5.2 Transparency Files

The DSB imports the following classifications, flags and thresholds from FIRDS Transparency Data:

Transparency Data Attribute Name	Example Value
Reporting period	1/Jan/2016 - 31/Dec/2016
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 provides Non-Equity Transparency data made available by ESMA in the following files:

- Delta files available daily. ESMA only generates delta files when there are changes.
  Example: DLTNCR_20180813_1of3.zip.
- Full files available weekly, normally on a Saturday.

Example: FULNCR_20180818_C_1of1.zip, FULNCR_20180818_F_1of1.zip.

The files are compressed to ZIP and one compressed file contains one XML file. The files are split by 500,000 records each or by the first letter of the CFI code in case of Full files, resulting in multiple files per day.

XML Schema: https://www.esma.europa.eu/sites/default/files/library/2016-_annex_2_firds_transparency_xml_schema.zip

The DSB uses a cut-off time of 9:00am CET and any files made available after that time will be put in the next day's ToTV folder.

5.3 DSB ISIN data

When an ISIN is created in the DSB Production environment, it is saved in the ToTV database in Production in real-time. This allows for an immediate provision of the uToTV flag for a newly created ISIN, i.e. if an instrument underlying has already been reported to FIRDS Reference Data, uToTV flag can be set real-time.

ISINs created in DSB UAT environment have no ToTV records. ISINs created in DSB Production are loaded into the UAT ToTV database overnight.

5.3.1 Expired ISINs

There is an overnight process in place that expires instruments passed their Expiry Date. For example,

- ISIN created today with Expiry Date < TODAY will be created as EXPIRED.
- ISIN created today with Expiry Date = TODAY, will be created as NEW, and will be moved to EXPIRED passed midnight on T+1.

Any instrument expired by the overnight process, will be added as part of the ToTV folder on T+1, e.g.:

An ISIN created on the 15-Oct will be in the 20181016 ToTV File Download, however, an ISIN with an Expiry Date of 17-Oct will be in the 20181019 ToTV File Download. The ISIN expiry process runs at midnight and expires ISINs that have an Expiry Date <= previous day so the updated ISIN will be published in the next day's ToTV File Download.

For example:

- 15/10 - ISIN 'X' created with Status: 'New' and Expiry Date: 2018-10-17';
- 16/10 - ISIN 'X' appears in ToTV File Download;
- 18/10 - ISIN 'X' set to 'Expired' by the expiry process;
- 19/10 - ISIN 'X' with status 'Expired' appears in ToTV File Download.

5.4 MIC TV/ SI list

In order to derive the DSB's ToTV and uToTV flags, an up-to-date list of MICs (European or equivalent) is required. For the purposes of ToTV/uToTV determination, the DSB is interested in trading venue types (MTFs, OTFs, RMs) as well as SI's.

At present, the DSB uses the following sources to obtain MIC types:

1. ESMA MiFID/UCITS/AIFMD entities register available at https://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_upreg
   As of 15/10/2018 there are 534 MICs across RMs/MTFs/OTFs/SIs available in the register.

2. ESMA Database of MiFID2/MiFIR Trading venues/Systematic Internalisers/Data Reporting Service providers https://www.esma.europa.eu/sites/default/files/tv_si_drsp_file.xls. As of 15/10/2018 there are 399 MICs available across RMs/MTFs/OTFs/SIs.
3. FCA register of authorised Multilateral Trading Facilities, Organised Trading Facilities and notified Systematic Internalisers https://register.fca.org.uk/servlet/servlet.FileDownload?file=0150X000006asKG. This is provided temporarily until the ESMA register is fully updated. The FCA register only provides data on UK's MICs and does not include Regulated Markets.
4. ISO 10383 latest MIC list https://www.iso20022.org/sites/default/files/ISO10383_MIC/ISO10383_MIC.xls. The list is updated monthly. The ISO MIC list is the most complete list of MICs, but does not include the MIC Type, although MIC Type can be derived for some MICs using **COMMENTS** and/or **NAME-INSTITUTION DESCRIPTION** fields. For the data DSB's derived using the ISO MIC list as of at the time of writing, see 11.1.2.
5. ESMA Regulated markets register (No longer supported as of 3 January 2018) https://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_mifid_rma. DSB uses the old RM ESMA register temporarily until the current ESMA register is fully updated. 50 MICs are still identified using the old ESMA RM register.
6. ESMA Multilateral trading facilities register (No longer supported as of 3 January 2018) http://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_mifid_mtf . DSB uses the old MTF ESMA register temporarily until the current ESMA register is fully updated. 81 MICs are still identified using the old MTF ESMA register.

In case of conflicting types for a MIC using different sources, the following order is used:

1. Current ESMA register, if not there
2. Current FCA register, if not there
3. Current ISO list to derive MIC Type, if not there
4. Whichever old ESMA RM or MTF register has the latest timestamp, if timestamp is the same for both – whichever has the latest modified date.

Any MIC for which the DSB has no information on its MIC Type will be set to Unknown. And consequently, should there be any ISINs that have been reported by unknown MICs only, those ISINs will have ToTV flag set to False.

E.g. the following MICs have been reporting data to FIRDS but are not on the ESMA register nor can they be identified from other MIC sources listed above:

MIC	ISO:COUNTRY	ISO:NAME-INSTITUTION DESCRIPTION	First FIRDS submission date
ABUL	BULGARIA	BULGARIAN STOCK EXCHANGE - ALTERNATIVE MARKET	20180104
ELEU	NORWAY	NASDAQ COMMODITIES - EUR POWER/ENERGY	20171220
ELNO	NORWAY	NASDAQ COMMODITIES - NOK POWER/ENERGY	20171220
ELSE	NORWAY	NASDAQ COMMODITIES - SEK POWER/ENERGY	20171220
ELUK	NORWAY	NASDAQ COMMODITIES - GBP POWER/ENERGY	20171220
FREI	NORWAY	NASDAQ COMMODITIES - FREIGHT COMMODITY	20171220

Essentially, until the above MICs are identified, any instruments reported only by the institutions above will not be marked as ToTV.

For any MIC where MIC type is first unknown, and is then identified, after it has been reporting data to FIRDS Reference Data, the DSB will not go back in history and reload the ToTV File Download data. However, ToTV records looked up via API/ToTV GUI search will return the ToTV/uToTV flags using the latest MIC data available.

ToTV File Download will not have historical data re-published at the time when MIC Type becomes known.

For example,

On 22/01/18, ISIN= AA1234567890 is reported from FIRDS by MIC=XXXX only. MIC type=Unknown. ToTV will be set to False.

On 22/01/18, MIC=XXXX also reports ISIN=AB1234567890 and ISIN=AC1234567890. But those ISINs are also reported by other MICs that are known to the DSB and are [RM, MTF, OTF]. Both ISINs are set to have ToTV True.

On 23/01/18, none of the ISINs [AA1234567890, AB1234567890, AC1234567890] get reported from FIRDS. They do not appear in the ToTV File Download for that day.

On 24/01/18, MIC=XXXX is identified as OTF, ISIN= AA1234567890 that was first reported on 22/01/18 with ToTV=False, will not get to the ToTV File Download folder again until it is reported to FIRDS Reference Data (by any MIC) or FIRDS Transparency.

The DSB will continue to review industry requests to enhance MIC related functionality and progress accordingly.

The DSB only holds the current MIC Type classification for a MIC, i.e. if a Regulated Market is re-classified as an MTF, or an MTF is re-classified as an OTF, the DSB will change the MIC Type classification as part of the daily MIC Upload process that happens the next working day after receipt of a new MIC/MIC Type classification. Historical ToTV File Download data will not be re-loaded to reflect the updated MIC Type. Any ToTV record request by ISIN via an API or GUI, will use the updated MIC Type. It is assumed that an SI will never become a Trading Venue, and a Trading Venue will never become an SI. However, if an SI did become a Trading Venue, then the ToTV flag would be set in absolute terms, rather than from the day when the MIC was re-classified as a Trading Venue, i.e. a ToTV query for an ISIN reported before the day the MIC became a TV, will return ToTV=True. In the same way, if a Trading Venue became an SI, all ISINs reported by that MIC will have ToTV set to False, including those reported before the day the MIC became an SI. ToTV File Download data will continue to have historical ToTV records unless re-loaded.

6 DSB's ToTV record structure

A ToTV record is comprised of the following components (detailed explanations below):

Name	Required	Notes
Header	✓	
DSB-ISIN	At least one is required	Only present for instruments issued by DSB.
Firds-RefData		Only present for instruments that have been reported to FIRDS Reference Data.
Firds-TransparencyData		Only present for instruments that have been reported to FIRDS Transparency.
Derived	✓	

6.1.1 Header component

Every ToTV record has the Header component and is uniquely identified by an ISIN:

Name	Datatype	Required	Notes
ISIN	ISIN	✓	
LastModifiedDate	Date	✓	Indicates when ToTV record was last modified which is the latest of: • Date of the last FIRDS Reference Data file in which this ISIN was last published. Extracted from the FIRDS file name, e.g. DLTINS_20180920_01of01, FULINS_E_20180915_01of02. • Date of the last FIRDS Transparency file in which this ISIN was last published. Extracted from the FIRDS file name, e.g. DLTNCR_20180920_1of1, FULNCR_20180915_R_1of5. • For DSB-issued ISINs: Date when ISIN was created/last modified. Taken from LastUpdateDateTime of the DSB ISIN record. Format: YYYY-MM-DD.
LastCompletedProcessingDate	Date	✓	Indicates when all ToTV sources components (DSB ISIN, FIRDS Reference Data + FIRDS Transparency) were processed. Taken from last_process_date.modified_date for a real-time ToTV record obtained via APIs or ToTV GUI Search. For ToTV File Download, all records that are written in the ToTV File Download on D1, will have LastCompletedProcessingDate=D1. Format: YYYY-MM-DD.
CFI-Category	Single Character	✓	First character of the CFI code. For a DSB ISIN, it's taken from the DSB ISIN record – char#1 in

			ClassificationType. For an ISIN coming from FIRDS, it's taken from the latest FIRDS Reference Data file – char#1 in ClssfctnTp. In a case where there is only Transparency Data for an ISIN, CFI-Category will be set to X.
CFI-Group	Single Character	✓	Second character of the CFI code. For a DSB ISIN, it's taken from the DSB ISIN record – char#2 in ClassificationType. For an ISIN coming from FIRDS, it's taken from FIRDS Reference Data - char#2 in ClssfctnTp. In a case where there is only Transparency Data for an ISIN, CFI-Category will be set to X.

Example of a Header:

"Header":{"ISIN":"IT0004999105","LastCompletedProcessingDate":"2018-02-19","LastModifiedDate":"2018-02-19","CFI-Category":"D","CFI-Group":"B"}

6.1.2 DSB-ISIN component

DSB-ISIN component holds an entire ISIN record as available in the DSB, e.g. "DSB-ISIN":{"Header":{"AssetClass":"Rates","InstrumentType":"Swap","UseCase":"Fixed_Float_OIS","Level":"InstRefDataReporting"},"Attributes":{"NotionalCurrency":"CHF","ExpiryDate":"2018-02-17","NotionalSchedule":"Constant","ReferenceRateTermValue":1,"ReferenceRate":"CHF-SARON-OIS-COMPOUND","ReferenceRateTermUnit":"DAYS","DeliveryType":"PHYS","PriceMultiplier":1},"ISIN":{"ISIN":"EZ360SPM5S63","Status":"Expired","StatusReason":"","LastUpdateDateTime":"2018-02-18T00:15:19"},"TemplateVersion":1,"Derived":{"ISOReferenceRate":"SARON-OIS-COMPOUND","CommodityDerivativeIndicator":"FALSE","UnderlyingAssetType":"Overnight Index Swap (OIS)","SingleorMultiCurrency":"Single Currency","IssuerorOperatoroftheTradingVenueIdentifier":"NA","FullName":"Rates Swap Fixed_Float_OIS CHF-SARON-OIS-COMPOUND 1 DAYS 20180217","ShortName":"NA/Swap OIS CHF 20180217","ClassificationType":"SRHCSP"}}

Non-DSB ISINs will not have a DSB-ISIN component in their ToTV records.

6.1.3 Firds-RefData component

ToTV records for ISINs published in FIRDS Reference Data will have Firds-RefData component. Otherwise the Firds-RefData component will not be part of the ToTV record.

The Firds-RefData component will hold as many records as there are MICs that have submitted Reference Data to FIRDS for an ISIN. If there have been multiple submissions of an ISIN by a MIC to FIRDS Reference Data, the ToTV record will only hold the latest submission for that <ISIN, MIC>.

Firds-RefData component is divided into 5 sections: RM, MTF, OTF, SI and UNKNOWN. The UNKNOWN section has MICs who have reported Reference Data to FIRDS but for which the MIC Type has not been identified from any of the sources the DBS uses to determine MIC Type. For further details on how the DSB sources MIC data, see 5.4.

6.1.4 Firds-Transparency component

Transparency data is made available for an ISIN and a reporting period. The reporting period is the period for which trading activity was considered when calculating Transparency. Depending on the instrument (bond vs non-bond), FIRDS Transparency Data can be published for a yearly period, a quarterly period or with no period. Every reporting period has a valid to and from date for which the transparency results are valid.

For example,

Reporting Period	Valid FROM	Valid TO	
01/01/2016-31/12/2016	01/06/2017	31/05/2018	Filtered out from 01/06/2018
01/01/2018-31/03/2018	16/05/2018	15/08/2018	Filtered out from 16/08/2018

The DSB filters out any transparency periods that are not current whereas Transparency records with no period are never filtered out.

At the time of writing the current reporting periods are:

Reporting Period	Valid FROM	Valid TO
01/01/2017-31/12/2017	01/06/2018	31/05/2019
01/04/2018-31/06/2018	16/08/2018	15/11/2018

Any ISIN for which Transparency Data has been published by FIRDS will have a ToTV record with a Firds-Transparency component. If Transparency Data has not been published for an ISIN, the ToTV record will not have a Firds-Transparency component.

For instructions on how to download and use full and delta transparency result files click here.

6.1.5 Derived component

The DSB derives 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

6.1.5.1 ToTV and ToTV Effective Date

- ToTV flag is set to True if and only if at least one trading venue reported the instrument to FIRDS. Trading venues include Regulated Markets (RM), Multilateral Trading Facilities (MTF) and Organised Trading Facilities (OTF).
- ToTV Effective Date is the earliest Effective Date of all the ToTV Effective Dates that Trading Venues reported to ESMA for an ISIN. The DSB uses the FIRDS "Date of Admission to Trading or Date of First Trade" attribute[6] to derive the ToTV effective date.

[6] 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

- For DSB-issued ISINs, the ToTV flag is always set to False and ToTV Effective Date is not present on the message[1].

6.1.5.2 uToTV and uToTV Effective Date

- The uToTV flag is set to True if and only if at least one trading venue reported one of the underlying ISINs to FIRDS. The DSB's uToTV flag can only be set for instruments with one or more Underlying ISINs.
- The uToTV Effective Date is the earliest Effective Date of all the underlying ToTV Effective Dates that Trading Venues reported to ESMA for an ISIN.
- For instruments with DSB-issued underlying ISINs only, the uToTV flag is always set to False and the uToTV Effective Date is not present on the message[1].
- For instruments with a single non-ISIN underlying or a basket of non-ISIN underlyings, such as Underlying Index, Reference Rate or LEI, the uToTV flag is set to False.
- Underlying reference data: For calculation of the uToTV flag, if the instruments' ISIN was issued by the DSB, the DSB uses the ISIN record underlying's ISINs. Otherwise, the DSB uses the FIRDS records underlying's ISINs.
- Should there be instruments in FIRDS Reference Data that were first reported with one or more Underlying Instrument ISIN by a trading venue, and later reported with no Underlying Instrument ISIN at all, the DSB will mark such instruments as being uToTV when first submitted by a venue, and the uToTV flag will remain set even if the instrument no longer has Underlying Instrument ISIN.

7 FIRDS data availability and daily DSB's ToTV files content

The DSB's ToTV File Download is structured by date and the first two characters of the CFI code.

The DSB uses a cut off time of 9:00 CET, and any FIRDS files (Reference Data and Transparency) made available by that time, will be processed in the current day's ToTV folder and file.

The CET timezone also considers summer-time (CEST) during summer months. So, while ToTV is configured as CET, the timezone changes between CEST (UTC +02:00) during summer months and CET (UTC +01:00) during the rest of the seasons. I.e.,

Given the ToTV File Download formation is scheduled to start at 09:00 CET:

It starts as early as 08:00 UTC during CET (converted from 09:00 CET)

And it starts as early as 07:00 UTC during CEST (converted from 09:00 CEST).

The data in a ToTV folder include all FIRDS files that became available since the last extraction, regardless of the date in the FIRDS file name.

The LastModifiedDate of a FIRDS record is extracted from the file name e.g.: DLTINS_20180921_* although it will appear in the 20180922 folder and file names if the file was made available after 9:00 CET on 20180921.

Below are some scenarios that outline which ToTV File Download files the FIRDS data will be recorded in based on the timing when the FIRDS files are made available.

The scenarios assume no previous submissions of ISIN1 by any MIC prior to the scenario described and no Transparency Data previously published for ISIN I1.

Scenario 1. Both FIRDS Reference Data and FIRDS Transparency Data files are available before 9:00 CET on the same day

- DLTINS_**20180921**_* arrived before 9:00 CET on 21/09/2018, hence it was processed on 21/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR
- DLTNCR**_20180921_*** arrived before 9:00 CET on 21/09/2018, hence it was processed on 21/09
- DLTNCR_**20180921**_* contained ISIN I1

ISIN I is put into the file named file-download/totv/20180921/ToTV-SR-20180921.zip with the LastModifiedDate=20180921

Scenario 2. Both FIRDS Reference Data and FIRDS Transparency Data files are available after 9:00 CET on the same day

- DLTINS_**20180921**_* arrived after 9:00 CET on 21/09/2018, hence it was processed on 22/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR
- DLTNCR**_20180921_*** arrived after 9:00 CET on 21/09/2018, hence it was processed on 21/09
- DLTNCR_**20180921**_* contained ISIN I1

ISIN I is put into the file named file-download/totv/20180922/ToTV-SR-20180922.zip with the LastModifiedDate=20180921

If MIC M1 also reports ISIN I1 in DLTINS_20180922 AND the file is made available before 9:00 CET on 20180922, ISIN I in the file named file-download/totv/20180922/ToTV-SR-20180922.zip will have LastModifiedDate=20180922 and the 20180921 submission of ISIN I1 by MIC M1 will not show in the ToTV File Download as that record will be overridden by the last update on 20180922.

Scenario 3. FIRDS Reference Data are available before 9:00 CET and FIRDS Transparency Data files are available after 9:00 CET on the same day

- DLTINS_**20180921**_* arrived before 9:00 CET on 21/09/2018, hence it was processed on 21/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR
- DLTNCR**_20180921_*** arrived after 9:00 CET on 21/09/2018, hence it was processed on 22/09
- DLTNCR_**20180921**_* contained ISIN I1

ISIN I is put into the file named file-download/totv/20180921/ToTV-SR-20180921.zip with the LastModifiedDate=20180921. The record has Reference Data only and no Transparency data.

ISIN I is put into the file named file-download/totv/20180922/ToTV-SR-20180922.zip with the LastModifiedDate=20180921. The record has Reference Data and Transparency data.

Scenario 4. FIRDS Transparency Data files are available before 9:00 CET and FIRDS Reference Data are available after 9:00 CET on the same day

- DLTNCR**_20180921_*** arrived before 9:00 CET on 21/09/2018, hence it was processed on 21/09

- DLTNCR_**20180921**_* contained ISIN I1
- DLTINS_**20180921**_* arrived after 9:00 CET on 21/09/2018, hence it was processed on 22/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR

ISIN I is put into the file named file-download/totv/20180921/ToTV-XX-20180921.zip with the LastModifiedDate=20180921. The record has Transparency Data only.

ISIN I is put into the file named file-download/totv/20180922/ToTV-SR-20180922.zip with the LastModifiedDate=20180921. The record has Reference Data and Transparency data.

Scenario 5. Both FIRDS Reference Data and FIRDS Transparency Data files are available before 9:00 CET on a different day

- DLTINS_**20180921**_* arrived before 9:00 CET on 24/09/2018, hence it was processed on 24/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR
- DLTNCR**_20180921_*** arrived before 9:00 CET on 24/09/2018, hence it was processed on 24/09
- DLTNCR_**20180921**_* contained ISIN I1

ISIN I is put into the file named file-download/totv/20180924/ToTV-SR-20180924.zip with the LastModifiedDate=20180921. The record has Reference Data and Transparency data.

Scenario 6. Both FIRDS Reference Data and FIRDS Transparency Data files are available after 9:00 CET on a different day

- DLTINS_**20180921**_* arrived after 9:00 CET on 24/09/2018, hence it was processed on 25/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR
- DLTNCR**_20180921_*** arrived after 9:00 CET on 24/09/2018, hence it was processed on 25/09
- DLTNCR_**20180921**_* contained ISIN I1

ISIN I is put into the file named file-download/totv/20180925/ToTV-SR-20180925.zip with the LastModifiedDate=20180921. The record has Reference Data and Transparency data.

Scenario 7. FIRDS Reference Data are available before 9:00 CET and FIRDS Transparency Data files are available after 9:00 CET on a different day

- DLTINS_**20180921**_* arrived before 9:00 CET on 24/09/2018, hence it was processed on 24/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR
- DLTNCR**_20180921_*** arrived after 9:00 CET on 24/09/2018, hence it was processed on 25/09
- DLTNCR_**20180921**_* contained ISIN I1

ISIN I is put into the file named file-download/totv/20180924/ToTV-SR-20180924.zip with the LastModifiedDate=20180921. The record has Reference Data only and no Transparency data.

ISIN I is put into the file named file-download/totv/20180925/ToTV-SR-20180925.zip with the LastModifiedDate=20180921. The record has Reference Data and Transparency data.

Scenario 8. FIRDS Transparency Data files are available before 9:00 CET and FIRDS Reference Data are available after 9:00 CET on a different day

- DLTNCR_**20180921_*** arrived before 9:00 CET on 24/09/2018, hence it was processed on 24/09
- DLTNCR_**20180921**_* contained ISIN I1
- DLTINS_**20180921**_* arrived after 9:00 CET on 24/09/2018, hence it was processed on 25/09
- DLTINS_**20180921**_* contained MIC M1 and ISIN I1
- ISIN I1 has CFI that starts with SR

ISIN I is put into the file named file-download/totv/20180924/ToTV-XX-20180924.zip with the LastModifiedDate=20180921. The record has Transparency Data only.

ISIN I is put into the file named file-download/totv/20180925/ToTV-SR-20180925.zip with the LastModifiedDate=20180921. The record has Reference Data and Transparency.

Since the ToTV service has been deployed into the Production environment, the ToTV File Download data has been available between 7am-10am UTC 80% of the time.

8 User workflow to request ToTV record

Users can make an enquiry for a ToTV record for an individual ISIN (via REST, FIX or ToTV GUI Search) or use the daily snapshot of all ToTV data via ToTV File Download.

8.1 REST

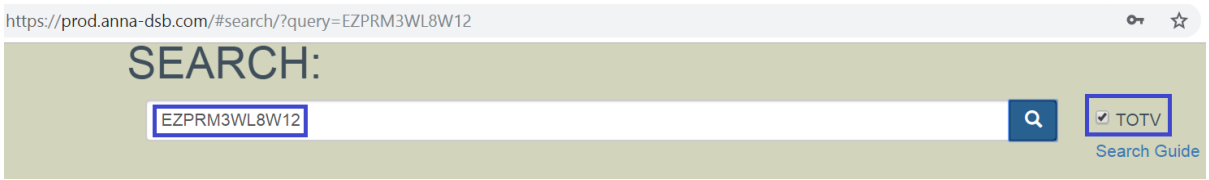
For details on how to retrieve ToTV record by ISIN or download ToTV files via REST API see REST API documentation.

8.2 FIX

For details on how to retrieve ToTV record by ISIN via FIX API see FIX API documentation.

8.3 ToTV GUI Search

To utilise ToTV search in the GUI, the users need to set the ToTV checkbox and provide an individual ISIN for which ToTV record is required:

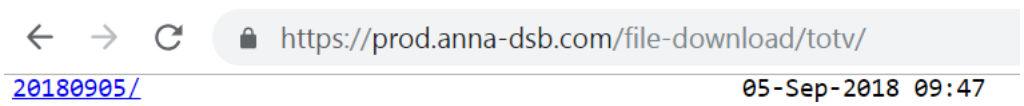


It is not possible to enquire ToTV records for more than 1 instrument at a time. There is no search by attributes but ISIN only for ToTV.

8.4 ToTV File Download

ToTV File Download provides a daily snapshot of all ToTV data, including DSB Reference Data for instruments issued by the DSB on T-1, FIRDS Reference Data and FIRDS Transparency where applicable:

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



The ToTV data is organised by date, e.g. the 20180905 folder contains any data from FIRDS Reference Data and FIRDS Transparency as published on 20180905 before 9:00 CET and DSB ISINs created on 20180904. Should there be any historical files made available passed 20180904 9:00 CET, they will be included in 20180905 ToTV File Download.

The timestamp indicates when the daily ToTV folder was made available for the users to download. The time is UTC.

ToTV File Download data for the day is made available once the DSB has completed processing of FIRDS data for the day.

Within a date folder the ToTV files are broken down by the first two characters of the CFI code, i.e. CFI Category and CFI Group:

For a complete list of the first 2 characters of the CFI code, see Appendix.

Should there be any non-OTC ISINs in FIRDS Transparency Data that have not yet been reported in FIRDS Reference Data, the CFI code for those will be unknown and they are then recorded in XX ToTV file, e.g. ToTV-XX-20180110.zip.

Instructions on how to automate the file download can be found at https://prod.anna-dsb.com/file-download/file-download-automation.readme.txt

9 Availability

Apart for planned service downtime, the ToTV File Download is available 7 days per week and 24 hours per day.

As with the rest of the DSB service, the ToTV service is currently available to FIX/REST/GUI users on 24x6 basis (See https://www.anna-dsb.com/download/dsb-service-level-policy-final/) moving on to 24x6.5 availability in 2019 (See https://www.anna-dsb.com/download/dsb-2019-ua-policies-final/).

Support will be available during DSB working days and hours. See https://www.anna-dsb.com/operating-hours-and-holidays/.
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 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 further guidance is received from ESMA.
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 flag 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 an instrument has a non-ISIN underlying, such as LEI/Index/Reference Rate or Base Product, uToTV will be set to False. Other MiFID II data will be set in the next processing date.
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 2.2.2 above.
4. *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 2.2.1, 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 trading venue, it will be marked as ToTV. For ISINs issued by the DSB, ToTV will be set to False until a further guidance from ESMA.
5. *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?*
    - ToTV and uToTV JSON record samples can be found in https://github.com/ANNA-DSB/ToTV-uToTV/tree/master/JSON
6. *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 https://www.anna-dsb.com/fees-rules-2019/
7. *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.

8. *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.
   - For the possible combinations of CFI char#1 and char#2, see 11.1.1
9. *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
10. *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.
11. *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.
12. *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
13. *Can an ISIN have multiple SI values?*
    - Yes, if traded by multiple SI's.
14. *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.
15. *Would DSB-ISIN object contain the entire OTC ISIN record created by DSB?*
    - Yes, the ToTV record contains the entire DSB-ISIN.
16. *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.

- Since the ToTV service has been deployed in Production, the ToTV File Download data were available within 7am-10am UTC time window on 80% of days.

17. How can users receive the MiFID II dataset?

- Please refer to section 8.

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

- As for OTC ISINs, please refer to section 8.

19. 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.
- Only the last submission by each MIC will be available on the ToTV record.

20. FAQ: Referring to your clarification with ESMA on the TOTV/uTOTV logic, is there a timeline you are expecting an answer from ESMA or is there a tendency/ feedback so far?

There is currently no timeline from ESMA to provide clarification on the ToTV/uToTV logic for OTC derivatives. As a reminder, on the ToTV webinar the DSB hold in November 2017, ESMA questioned some of the key assumptions of the DSB's ToTV/uToTV service, specifically using FIRDS as the only source to determine ToTV flags and more importantly categorising ISIN as part of the ToTV definition.

Following multiple requests to facilitate user integration, independent of the business logic used to set the DSB's ToTV and uToTV flags, the DSB has implemented its ToTV/uToTV service for all instruments not in scope of the ESMA opinion on OTC derivatives (Ref. ESMA70-156-117). The intention was to allow users to integrate with the service immediately, so that the future extension of the service to OTC Derivatives that are in scope of the above mentioned ESMA ToTV opinion can be seamless.

11 Appendix

11.1.1 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
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

11.1.2 MIC Types derived from the ISO list

As of 15/10/2018, these are the 66 MICs that continue to be derived based on the ISO list, as they are not present in any other MIC sources (for details, see 5.4):

MIC	ISO-10383 Derived MIC Type	ISO:COUNTRY	ISO:NAME-INSTITUTION DESCRIPTION	ISO:COMMENTS
AFSI	OTF	THE NETHERLANDS	AFS - OTF - INTEREST RATE DERIVATIVES	ORGANISED TRADING FACILITY FOR INTEREST RATE DERIVATIVES.
AFSL	OTF	THE NETHERLANDS	AFS - OTF - STRUCTURED PRODUCTS	ORGANISED TRADING FACILITY FOR STRUCTURED PRODUCTS.
AFSO	OTF	THE NETHERLANDS	AFS - OTF - BONDS	ORGANISED TRADING FACILITY FOR BONDS (CORPORATE, GOVERNMENT, T-BILL, CP, CD, MTN).
AFSX	OTF	THE NETHERLANDS	AFS - OTF - FX FORWARDS	ORGANISED TRADING FACILITY FOR FX FORWARDS.
AMPX	MTF	UNITED KINGDOM	ASSET MATCH PRIVATE EXCHANGE	MULTILATERAL TRADING FACILITY (MTF) FOR EQUITIES.
BCRM	RM	UNITED KINGDOM	CBOE EUROPE REGULATED MARKETS	CBOE REGULATED MARKETS.
BISI	SI	UNITED KINGDOM	GOLDMAN SACHS INTERNATIONAL BANK - SYSTEMATIC INTERNALISER	GSIB SYSTEMATIC INTERNALISER
BNSX	SI	CANADA	THE BANK OF NOVA SCOTIA - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
BOFS	SI	UNITED KINGDOM	BANK OF SCOTLAND PLC - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
CBKF	SI	GERMANY	COMMERZBANK COMMANDER - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER - TRANSACTIONS EXECUTED ON THE COMMANDER PLATFORM OF COMMERZBANK.
CCML	OTF	UNITED KINGDOM	CONTINENTAL CAPITAL MARKETS LIMITED - OTF	ORGANISED TRADING FACILITY.
CIMD	OTF	SPAIN	CIMD S.V. S.A. - OTF	ORGANISED TRADING FACILITY.
CMMT	MTF	UNITED KINGDOM	CLEAR MARKETS EUROPE LIMITED	MTF REGISTERED SWAP EXECUTION FACILITY
CSZH	OTF	SWITZERLAND	CREDIT SUISSE (CH)	BILATERAL ORGANISED TRADING FACILITY.
EUWA	SI	GERMANY	EUWAX AG - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
EXSY	SI	FRANCE	EXANE DERIVATIVES - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
FXCM	RM	UNITED STATES OF AMERICA	FXCM	REGISTERED & REGULATED MARKET FOR OTC FOREIGN EXCHANGE OPTIONS TRADING. MARKET FOR SPOT FX AND OPTIONS.
FXGB	MTF	UNITED KINGDOM	FXCM - MTF	MULTILATERAL TRADING FACILITY (MTF) FOR OTC DERIVATIVES.
GMEG	MTF	UNITED KINGDOM	GMEX EXCHANGE	MTF FOR DERIVATIVES AND SECURITIES
HBPL	SI	POLAND	HSBC BANK POLSKA S.A. - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.

IBEQ	SI	ITALY	INVEST BANCA - IBIS EQUITY - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
IFLS	OTF	UNITED KINGDOM	SWAPXECUTE	ORGANISED TRADING FACILITY (OTF) FOR OTC DERIVATIVES. NOT LIVE YET.
IECE	OTF	UNITED KINGDOM	ICAP ENERGY LTD OTF - EUROPEAN COMMODITIES AND ENERGY DERIVATIVES	OTF FOR TRADING OF EUROPEAN COMMODITIES AND ENERGY DERIVATIVES.
IMCM	MTF	UNITED KINGDOM	ICAP MTF - COMMODITIES	MULTILATERAL TRADING FACILITY FOR COMMODITIES.
IMCO	OTF	THE NETHERLANDS	ICE ENDEX OTF FUTURES	ELECTRONIC ORGANISED TRADING PLATFORM.
INGE	SI	THE NETHERLANDS	ING BANK NV - SPRINTERS AND EQUITY - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER FOR SPRINTERS AND EQUITY.
INGF	SI	THE NETHERLANDS	ING BANK NV - FOREIGN EXCHANGE - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER FOR FX.
ITGL	MTF	IRELAND	ITG - POSIT MTF	
IOFB	OTF	UNITED KINGDOM	ICAP SECURITIES OTF - BUTLER FX DERIVATIVES	OTF FOR THE TRADING OF FX DERIVATIVES.
KLEU	SI	UNITED KINGDOM	KNIGHT LINK EUROPE	SYSTEMATIC INTERNALISER
LMAE	MTF	UNITED KINGDOM	LMAX - EQUITIES	FSA REGULATED MTF FOR RETAIL CLIENTS TO TRADE CFDS UNDERLYINGS IN MULTIPLE ASSETS CLASSES INCLUDING EQUITIES.
MANL	MTF	THE NETHERLANDS	MARKETAXESS B.V.	MULTILATERAL TRADING FACILITY.
MBUL	MTF	BULGARIA	MTF SOFIA	MULTILATERAL TRADING FACILITY FOR EQUITIES, BONDS, DERIVATIVES.
MCXS	MTF	UNITED KINGDOM	CURRENEX MTF - STREAMING	
MERD	MTF	NORWAY	MERKUR MARKET - DARK POOL	MULTILATERAL TRADING FACILITY FOR FINANCIAL INSTRUMENTS - DARK POOL
MIBG	RM	SPAIN	MERCADO ORGANIZADO DEL GAS	REGULATED MARKET OPERATOR FOR THE ORGANISED GAS MARKET IN SPAIN.
MIBL	SI	LUXEMBOURG	MITSUBISHI UFJ INVESTOR SERVICES AND BANKING - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
MKAP	SI	CYPRUS	MERITKAPITAL - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
MUTI	SI	UNITED KINGDOM	MITSUBISHI UFJ TRUST INTERNATIONAL LIMITED	
NORD	SI	GERMANY	HSH NORDBANK - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
SGMA	MTF	UNITED STATES OF AMERICA	GOLDMAN SACH MTF	GS'S MTF. IMPLEMENTATION DATE: FEBRUARY 1ST 2008

SWEE	SI	ESTONIA	SWEDBANK ESTONIA - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
SWLT	SI	LITHUANIA	SWEDBANK LITHUANIA - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
SWLV	SI	LATVIA	SWEDBANK LATVIA - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
TEEG	OTF	UNITED KINGDOM	TULLETT PREBON SECURITIES - OTF - EUROPEAN GOVERNMENT BONDS	ORGANISED TRADING FACILITY FOR THE TRADING OF EUROPEAN GOVERNMENT BONDS.
TEMC	MTF	UNITED KINGDOM	TULLETT PREBON EUROPE - MTF - COMMODITIES AND ENERGY DERIVATIVES	MTF FOR THE TRADING OF COMMODITIES & ENERGY DERIVATIVES.
TPEQ	MTF	UNITED KINGDOM	TULLETT PREBON PLC - TP EQUITYTRADE	MULTILATERAL TRADING PLATFORM FOR EQUITY DERIVATIVES.
TPES	OTF	SPAIN	TULLETT PREBON EUROPE - OTF - MADRID	ORGANISED TRADING FACILITY.
TPFR	OTF	FRANCE	TULLETT PREBON EUROPE - OTF - PARIS	ORGANISED TRADING FACILITY.
VTBC	SI	UNITED KINGDOM	VTB CAPITAL PLC - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
VTPS	OTF	GERMANY	TRADEPLUS	ORGANISED TRADING FACILITY (OTF) FOR STRUCTURED PRODUCTS AND BONDS. LIVE IN JANUARY 2018.
WBKP	SI	POLAND	BANK ZACHODNI WBK S.A. - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
XABC	SI	SWEDEN	ABG SUNDAL COLLIER AB - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
XATS	RM	CANADA	ALPHA EXCHANGE	REGULATED MARKETPLACE FOR TRADING EQUITY AND EQUITY RELATED SECURITIES.
XBDV	RM	ANGOLA	BOLSA DE DIVIDA E VALORES DE ANGOLA (BODIVA) - ANGOLA SECURITIES EXCHANGE	REGULATED MARKETS FOR SECURITIES TRADING.
XCIE	RM	GUERNSEY, C.I.	THE INTERNATIONAL STOCK EXCHANGE	REGULATED MARKET.
XGCL	MTF	UNITED KINGDOM	GLOBAL COAL LIMITED	MTF PLATFORM FOR OTC DERIVATIVES
XICB	MTF	SWITZERLAND	SIX CORPORATE BONDS AG	MTF PLATFORM FOR CORPORATE BONDS TRADING.
XLDX	MTF	UNITED KINGDOM	LONDON DERIVATIVES EXCHANGE	MTF FOR DERIVATIVES
XLGT	SI	LIECHTENSTEIN	LGT BANK AG - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER
XLLB	SI	LIECHTENSTEIN	LIECHTENSTEINISCHE LANDESBANK AG - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
XNLX	MTF	UNITED KINGDOM	NASDAQ OMX NLX	MULTILATERAL TRADING FACILITY FOR LISTED DERIVATIVES.
XNMR	MTF	SWEDEN	NORDIC MTF REPORTING	OFF EXCHANGE TRADE REPORTING
XSPM	MTF	FRANCE	EURONEXT STRUCTURED PRODUCTS MTF	MULTILATERAL TRADING FACILITY FOR THE TRADING OF STRUCTURED PRODUCTS.

XVPB	SI	LIECHTENSTEIN	VP BANK AG - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER. REGISTERED MARKET FOR FX OTC DERIVATIVES.
XZAP	MTF	CROATIA	PROGRESS MARKET	MULTILATERAL TRADING FACILITY FOR SMALL AND MEDIUM-SIZED ENTERPRISES.

11.1.3 MICs outside of EEA identified as RM/MTF/OTF/SI

The below table lists all the MICs with ISO Countries outside of EEA alongside the sources of their corresponding MIC Types:

MIC	DSB MIC Type	ESMA MIC Type	FCA MIC Type	ISO-10383 Derived MIC Type	Old ESMA MIC Type	ISO COUNTRY	ISO NAME-INSTITUTION DESCRIPTION	ISO COMMENTS
BLKX	MTF				MTF	UNITED STATES OF AMERICA	INSTINET BLOCKCROSS ATS	ALTERNATIVE TRADING SYSTEM.
BNSX	SI			SI		CANADA	THE BANK OF NOVA SCOTIA - SYSTEMATIC INTERNALISER	SYSTEMATIC INTERNALISER.
CSZH	OTF			OTF		SWITZERLAND	CREDIT SUISSE (CH)	BILATERAL ORGANISED TRADING FACILITY.
FXCM	RM			RM		UNITED STATES OF AMERICA	FXCM	REGISTERED & REGULATED MARKET FOR OTC FOREIGN EXCHANGE OPTIONS TRADING. MARKET FOR SPOT FX AND OPTIONS.
GSXL	RM			RM	RM	GIBRALTAR	THE GIBRALTAR STOCK EXCHANGE	EU REGULATED MARKET FOR TECHNICAL LISTINGS IN COLLECTIVE INVESTMENT SCHEMES.
IEPA	RM				RM	UNITED STATES OF AMERICA	INTERCONTINENTAL EXCHANGE	
NYFX	MTF				MTF	UNITED STATES OF AMERICA	MILLENNIUM	AT THE END OF DEC 2009, THE NYSE SHUT DOWN EURO-MILLENNIUM, THE EUROPEAN EQUITIES ATS. IN DEC 2009, THE CONVERGEX GROUP BOUGHT MILLENNIUM, THE US EQUITIES ATS.
RBCM	SI	SI	SI			CANADA	RBC - ROYAL BANK OF CANADA	FIXED INCOME, CURRENCIES AND COMMODITIES.
SGMA	MTF			MTF		UNITED STATES OF AMERICA	GOLDMAN SACH MTF	GS'S MTF. IMPLEMENTATION DATE: FEBRUARY 1ST 2008
XATS	RM			RM		CANADA	ALPHA EXCHANGE	REGULATED MARKETPLACE FOR TRADING EQUITY AND EQUITY RELATED SECURITIES.

XBDV	RM			RM		ANGOLA	BOLSA DE DIVIDA E VALORES DE ANGOLA (BODIVA) - ANGOLA SECURITIES EXCHANGE	REGULATED MARKETS FOR SECURITIES TRADING.
XCIE	RM			RM		GUERNSEY, C.I.	THE INTERNATIONAL STOCK EXCHANGE	REGULATED MARKET.
XICB	MTF			MTF		SWITZERLAND	SIX CORPORATE BONDS AG	MTF PLATFORM FOR CORPORATE BONDS TRADING.
XVTX	MTF				MTF	SWITZERLAND	SIX SWISS EXCHANGE - BLUE CHIPS SEGMENT	BLUE CHIPS EQUITY SEGMENT.

More details about MIC sources can be found in 5.4.