DERIVATIVES SERVICE BUREAU (DSB) LTD

Rates : Option : Non_Standard

UPI Product Definition

Version 4

Date	Status	Version	Revision Details
01 Sep 2022	Draft	1	Initial Version
03 Feb 2023	Draft	2	• Update example values in the Request and Record templates layout • Insert Underlier Name attribute and Derivation rules
01 Sep 2023	Draft	3	• Remove "Classified as Confidential" in the Footer section. • Update Associated Documentation to include Best Practice Guidelines and FAQs. • Update Best Practice Guidelines to include the link to Best Practice Guidelines and FAQs.
11 Dec 2023	Draft	4	• Update CFI Taxonomy. • Update Request and Record template for Option Type and Option Exercise Style as Optional. • Update Derivation rules for the following: a. Classification Type b. CFI Option Style and Type • Update Appendix 1 – ISO 4914 Equivalence.

Contents

1. Introduction

This document is designed to act as a manual for users to interpret the Product Definitions in the DSB UPI Service.

This document provides the user with the detailed description of the UPI Product Definition content such as attribute enumerations, validation, normalization, and derivation where applicable.

1.1   Associated Documentation

The reference documents below contain values and information maintained by the DSB for consistency and ease of access.

These documents are made available on the ANNA DSB website (Product Definitions page):

Title	Description	Location
Enumerations Document	Lists all fixed values used for a product	Enumerations section
Product Definition Data Dictionary	Defines attributes in the Request and Record templates; and from which they are referenced on	Other Documents section
Product Definition Validations and Normalizations Document	Specifies details on validation and normalization rules	
UPI Underlier Input Method	Defines the structure for the input of the underlier following the rules that allow users to identify the Asset Class, Underlying Structure, Underlying Type, and Underlying ID Source.	
Best Practice Guidelines and FAQs	Lists answers to queries raised by users and provides guidance on the use of the templates	
GitHub Environment Section	ANNA DSB Github Environment where the JSON templates for each product is found	

2. Product Taxonomy

2.1 CFI Taxonomy

Source: ISO 10962 (CFI Code) – Third edition 2015-07-15

Attr #	Title	Values	Name	Description
	Instrument (Category)	H	Non-listed and complex listed options	
	Asset Class (Group)	R	Rates	
Attr #1	Underlying Assets	A	Basis Swap (Float – Float)	An interest rate swap where the cash flows that are exchanged between each party are based on different floating rates or prices (i.e., one party pays an agreed floating rate multiplied by a notional amount, in exchange for receipt of periodic payments based on another agreed floating rate multiplied by the same notional amount, from the other party)
		C	Fixed – Floating	An interest rate swap in which one party (the fixed rate payer) agrees to make fixed payments (the fixed leg) on set dates for an agreed period to another party (the floating rate payer), based on a fixed interest rate multiplied by a notional amount, in exchange for receipt of periodic payments (the floating leg), from the floating rate payer, based on a floating rate index multiplied by the same notional amount (in most cases) upon which the fixed rate payments are based
		D	Fixed – Fixed	An interest rate swap in which both parties pay a fixed interest rate that they could not otherwise obtain outside of a swap arrangement; for example, if each counterparty uses a different native currency, but wants to borrow money in the other counterparty's native currency; Fixed-Fixed swaps generally take the form of either a zero coupon swap or a cross-currency swap
		G	Inflation Rate Index	An interest rate swap in which one party (the fixed rate payer) makes periodic payments to another party (the floating rate payer) based on a fixed rate of interest multiplied by a notional amount in exchange for receipt of periodic payments based on an inflation rate index multiplied by the same notional amount upon which the fixed rate payments are based
		H	Overnight Index Swap (OIS)	An interest rate swap in which one party (the fixed rate payer) makes periodic payments to another party (the floating rate payer) based on a fixed rate of interest multiplied by a notional amount in exchange for receipt of periodic payments based on an overnight rate index multiplied by the same notional amount upon which the fixed rate payments are based
		O	Options	Options

		R	Forwards	Derivatives involving the exchange of two rates on a defined date, as agreed by the two parties to the trade
		F	Futures	Futures
		M	Others	Others (miscellaneous)
Attr #2	Option style and type	A	European-Call	An option on a contract which allows its holder (buyer) to exercise the right to buy specified assets (interest rates product) at a fixed price only on the expiration date of the call
		B	American-Call	An option on a contract which allows its holder (buyer) to exercise the right to buy specified assets (interest rates product) at a fixed price at any time during the term of the call option, up to and including the expiration date of the call
		C	Bermudan-Call	An option on a contract which allows its holder (buyer) to exercise the right to buy specified assets (interest rates product) at a fixed price on a number of specific dates within the exercise period of the call
		D	European-Put	An option on a contract which allows its holder (buyer) to exercise the right to sell specified assets (interest rates product) at a fixed price only on the expiration date of the put
		E	American-Put	An option on a contract which allows its holder (buyer) to exercise the right to sell specified assets (interest rates product) at a fixed price at any time during the term of the put option, up to and including the expiration date of the put
		F	Bermudan-Put	An option on a contract which allows its holder (buyer) to exercise the right to sell specified assets (interest rates product) at a fixed price on a number of specific dates within the exercise period of the put
		G	European-Chooser	An option on a contract which allows its holder (buyer) to exercise the right to buy (call) or sell (put) specified assets (interest rates product) at a fixed price, only on the contract's expiration date; the buyer does not have to decide whether the contract will be a put or a call until an agreed future date, prior to expiration
		H	American-Chooser	An option on a contract which allows its holder (buyer) to exercise the right to buy (call) or sell (put) specified assets (interest rates product) at a fixed price at any time during the term of the contract, up to and including the expiration date of the call or put; the buyer does not have to decide whether the contract will be a put or a call until an agreed future date, prior to expiration
		I	Bermudan-Chooser	An option on a contract which allows its holder (buyer) to exercise the right to buy (call) or sell (put) specified assets (interest rates product) at a fixed price on a number of specific dates within the exercise period of the contract; the buyer does not have to decide whether the contract will be a put or a call until an agreed future date, prior to expiration

		X	Not applicable/undefined	*Note: This is included in order to support Options products with no Option Type and Option Exercise Style. However, this is taken from ISO 10962: 2015 (CFI Code).*
Attr #3	**Valuation method or trigger**	V	Vanilla	An option for which all terms are standardized
		A	Asian	An option where either the strike price or the settlement price is the average level of an underlying instrument over a predetermined period; the averaging can be either a geometric or arithmetic average
		D	Digital (Binary)	An option that has a pre-determined pay-out if the option is in-the-money and the payoff condition is satisfied; also referred to as a "binary option" or an "all-or-nothing option"
		B	Barrier	An option whose final exercise depends upon the path taken by the price of an underlying instrument; for a "knock-out" barrier option, the option is cancelled if the underlying price crosses a predetermined barrier level; for a "knock-in" barrier option, the option becomes available-for-exercise if the underlying price crosses a predetermined barrier level
		G	Digital Barrier	A digital option embedded with a barrier option; there are different variations of this type of option; as an example, a down-and-out digital call option will pay a fixed payoff, or the underlying, at any time before maturity that the underlying price is equal to or greater than the barrier level; it will pay zero if the underlying price is less than the barrier level
		L	Lookback	An option that minimizes the uncertainties related to the timing of market entry; there are two types of look-back options: fixed and floating; the fixed option strike is determined at purchase, and the floating option strike is determined at maturity
		P	Other Path Dependent	An option on a contract whose payoff is directly related to the price pattern the underlying asset follows during the life of the contract
		M	Others	Others (miscellaneous)
Attr #4	**Delivery Type**	C	Cash	The discharge of an obligation by payment or receipt of a net cash amount instead of payment or delivery by both parties
		P	Physical	The meeting of a settlement obligation under a derivative contract through the receipt or delivery of the actual underlying instrument(s) instead of through cash settlement
		E	Elect at exercise	The method of delivery of the underlying instrument when the option is exercised shall be determined at the time of exercise

2.2   ISDA Taxonomy

The table below is based on the products identified as part of the ISDA 2.0 taxonomy.

Asset Class	Base Product	Sub-Product	Transaction Type	DSB Product Definition Name
Rates	Exotic	Various entries	Various entries	Non-Standard Option

3. Request Template

The Request Template describes the input message received by the UPI service.

Users can find the detailed description of this template in the Rates spreadsheet that contains the layout of all templates. This can be found in the Rates section of the Product Definitions page on the ANNA DSB website.

Change details of the template can be found on the appropriate Github page.

Template name	Template details	Release
Request.Rates.Option.Non_Standard.UPI.json	Initial version	Initial

3.1 Underlier Input Method

For products that have an option for Single or Multiple Underliers, users must select an underlying structure applicable [Single Underlier, Basket]. If a Basket is selected, underlier entry is not required.

Title	Description	
Select Underlying Structure	User must select which underlying structure the product will have. • Single Underlier • Basket	
Select Underlier ID Source	If Single Underlier is chosen, user is able to select a Primary or Alternate Underlier from the available options. • FPML	
Input Underlier ID	FPML	This is validated against Floating Rate Index and Inflation Rate Index Enumerated List.

3.2 Validation Rules

For non-specific product validation rules, please refer to UPI Product Definition Validations and Normalizations Document can be found in the Other Documents section on the DSB website.

3.2.1 Underlying Structure [oneOf structure]

- User can only select either Single Underlier (Single value) or Basket (Multiple values) and is a required field.
- If Single Underlier is selected, the associated attributes must be present in the REQUEST message and only one value can be selected in the enumeration.
  - **Associated attributes: Underlier ID Source; Underlier ID; Reference Rate Term Value; Reference Rate Term Unit
- If Basket is selected, Underlier ID and its associated attributes will not be present in REQUEST and RECORD messages.
- Only "Basket" is allowed value in the REQUEST message for multiple underliers.

4. Record Template

The Record Template describes the record returned by the UPI service.

Users can find the detailed description of this template in the Rates spreadsheet that contains the layout of all templates. This can be found in the Rates section of the Product Definitions page on the ANNA DSB website.

Change details of the template can be found on the appropriate Github page.

Version	Template name	Template details
V.1	Rates.Option.Non_Standard.UPI.V1.json	Initial version
V.2	Rates.Option.Non_Standard.UPI.V2.json	Update on Option Type and Exercise Style

4.1 Normalization Rules

For non-specific product normalization rules, please refer to UPI Product Definition Validations and Normalizations Document can be found in the Other Documents section on the DSB website.

4.2 Derivation Rules

This section describes the derivations of product attributes highlighted in the Record Template.

4.2.1 Classification Type

Attribute	Classification Type		
Structure	Instrument Type + Asset Class + Underlying Asset Type + Option Type/Style + Valuation Method or Trigger + Delivery Type		
Example	HRGAVP		
Source	ISO 10962 (CFI) – Third edition 2015-07-15		
Source Attribute	**Source Value**	**Derivation Method**	**Result**
Instrument Type	Non-listed and complex listed options	Fixed Mapping	H
Asset Class	Rates	Fixed Mapping	R
Underlying Asset Type	Basis Swap (Float – Float)	Mapped to =>	A
	Fixed – Floating	Mapped to =>	C
	Fixed – Fixed	Mapped to =>	D
	Inflation Rate Index	Mapped to =>	G

	Overnight Index Swap (OIS)	Mapped to =>	H
	Options	Mapped to =>	O
	Forwards	Mapped to =>	R
	Futures	Mapped to =>	F
	Others	Mapped to =>	M
Option Type/Style	PUTO/EURO	Mapped to =>	D
	CALL/EURO	Mapped to =>	A
	OPTL/EURO	Mapped to =>	G
	PUTO/AMER	Mapped to =>	E
	PUTO/BERM	Mapped to =>	F
	CALL/AMER	Mapped to =>	B
	CALL/BERM	Mapped to =>	C
	OPTL/AMER	Mapped to =>	H
	OPTL/BERM	Mapped to =>	I
	No input value	*Mapped to =>*	*X*
Valuation Method or Trigger	Vanilla	Mapped to =>	V
	Asian	Mapped to =>	A
	Digital (Binary)	Mapped to =>	D
	Barrier	Mapped to =>	B
	Digital Barrier	Mapped to =>	G
	Lookback	Mapped to =>	L
	Other Path Dependent	Mapped to =>	P
	Others	Mapped to =>	M
Delivery Type	CASH	Mapped to =>	C
	PHYS	Mapped to =>	P

	OPTL	Mapped to =>	E

4.2.2   Short Name

Attribute	Short Name		
Structure	"NA" + "/" + Instrument Type + Product + Underlying Asset Type + Notional Currency		
Example	NA/O Nstd Infl Idx EUR		
Source	ISO 18774 (Financial Instrument Short Name) - First edition 2015-11		
Source Attribute	**Source Value**	**Derivation Method**	**Result**
Issuer Name	None	Fixed Value	NA/
Instrument Type	Options	Fixed Abbreviation	O
Product	Non-Standard	Fixed Abbreviation	Nstd
Underlying Asset Type	Basis Swap (Float – Float)	Mapped to =>	Flt Flt
	Fixed – Floating	Mapped to =>	Fxd Flt
	Fixed – Fixed	Mapped to =>	Fxd Fxd
	Inflation Rate Index	Mapped to =>	Infl Idx
	Overnight Index Swap (OIS)	Mapped to =>	OIS
	Options	Mapped to =>	O
	Forwards	Mapped to =>	Forwards
	Futures	Mapped to =>	Futures
	Others	Mapped to =>	Oth
Notional Currency	Notional Currency	Mapped Enumeration	e.g., USD, EUR, GBP

4.2.3. Underlier Name

Attribute	Underlier Name		
Underlying Asset	**Underlier Name Source**	**Underlier Name Source Attribute**	**Underlier Name**
Reference Rate	UPI record	Reference Rate	EUR-EXT-CPI
Basket	Constant	N/A	Basket

4.2.4. CFI Option Style and Type

Attribute	CFI Option Style and Type		
Source Attribute	**Source Value**	**Derivation Method**	**Result**
Option Style and Type	PUTO/AMER	Mapped to =>	American-Put
	PUTO/BERM	Mapped to =>	Bermudan-Put
	PUTO/EURO	Mapped to =>	European-Put
	CALL/AMER	Mapped to =>	American-Call
	CALL/BERM	Mapped to =>	Bermudan-Call
	CALL/EURO	Mapped to =>	European-Call
	OPTL/AMER	Mapped to =>	American-Chooser
	OPTL/BERM	Mapped to =>	Bermudan-Chooser
	OPTL/EURO	Mapped to =>	European-Chooser
	No input value	*Mapped to =>*	*Not applicable/undefined*

4.2.5 CFI Delivery Type

Attribute	CFI Delivery Type		
Source Attribute	**Source Value**	**Derivation Method**	**Result**
Delivery Type	CASH	Mapped to =>	Cash
	PHYS	Mapped to =>	Physical
	OPTL	Mapped to =>	Elect at Exercise

5. Supplementary Information

5.1 Best Practice Guidelines

Please refer to Best Practice Guidelines and FAQs that can be found in the Other Documents section on the DSB website.

5.2 Additional Comments

No Additional comment is provided for this product.

6. Appendix 1 – ISO 4914 Equivalence

This section describes the attributes as per the ISO 4914 Unique Product Identifier (UPI).

ISO 4914 Reference Data Elements		Request Attribute	Record Attribute
Asset Class	M	Asset Class	Asset Class
Instrument Type	M	Instrument Type	Instrument Type
Currency associated with an underlying reference rate	M	Notional Currency	Notional Currency
Delivery Type	M	Delivery Type	Delivery Type
			CFI Delivery Type
Option Style	M	Option Exercise Style	Option Exercise Style *(CFI Option Style and Type)*
Option Type	M	Option Type	Option Type *(CFI Option Style and Type)*
Return, pricing method or payout trigger	M	Valuation Method or Trigger	Valuation Method or Trigger
Underlier ID	C	Underlier ID	Reference Rate
Underlier ID source	C	Underlier ID Source	Not Required
Underlier Type	M	Not Required	Underlying Asset Type
Underlying rate index tenor period	C	Reference Rate Term Unit	Reference Rate Term Unit
Underlying rate index tenor period multiplier	C	Reference Rate Term Value	Reference Rate Term Value

7. Appendix 2 - OTC ISIN-UPI Mapping

This section describes the mapping between the ISIN and UPI input attributes.

One Of	ISIN Input Attributes	Condition	Mapping Logic	UPI Input Attributes	Example UPI Value	Comments
	Asset Class		Direct Map	Asset Class	Rates	
	Instrument Type		Direct Map	Instrument Type	Option	
	Use Case		Direct Map	Product	Non_Standard	
	Level		Set to "UPI"	Level	UPI	
A	Term of Contract (By Effective Date)					
	Notional Currency		Direct Map	Notional Currency	EUR	
	Expiry Date		No Mapping			
	Price Multiplier		No Mapping			
	Underlying Asset Type		Direct Map	Underlying Asset Type	Inflation Rate Index	
	Option Type		Direct Map	Option Type	CALL	
	Option Exercise Style		Direct Map	Option Exercise Style	EURO	
	Valuation Method or Trigger		Direct Map	Valuation Method or Trigger	Vanilla	
	Delivery Type		Direct Map	Delivery Type	PHYS	
	Effective Date		No Mapping			
	Expiry Date Adjusted		No Mapping			
	Tenor Calculator Method		No Mapping			
	Reference Rate	If Reference Rate = 1	If Reference Rate = 1 = "Single Underlier"	Underlying Structure	Single Underlier	"One Of" Underlying Structure
			Map To	Underlier ID	EUR-EXT-CPI	
			Set to "FPML"	Underlier ID Source	FPML	
		If Reference Rate > 1	If Reference Rate > 1 = "Basket"	Underlying Structure	Basket	"One Of" Underlying Structure
	Reference Rate Term Value	If Reference Rate = 1	Direct Map	Reference Rate Term Value	3	

		If Reference Rate > 1	No Mapping			
	Reference Rate Term Unit	If Reference Rate = 1	Direct Map	Reference Rate Term Unit	MNTH	
		If Reference Rate > 1	No Mapping			
B	Term of Contract (By Tenor)					
	Notional Currency		Direct Map	Notional Currency	EUR	
	Expiry Date		No Mapping			
	Price Multiplier		No Mapping			
	Underlying Asset Type		Direct Map	Underlying Asset Type	Inflation Rate Index	
	Option Type		Direct Map	Option Type	CALL	
	Option Exercise Style		Direct Map	Option Exercise Style	EURO	
	Valuation Method or Trigger		Direct Map	Valuation Method or Trigger	Vanilla	
	Delivery Type		Direct Map	Delivery Type	PHYS	
	Term of Contract Value		No Mapping			
	Term of Contract Unit		No Mapping			
	Reference Rate	If Reference Rate = 1	If Reference Rate = 1 = "Single Underlier"	Underlying Structure	Single Underlier	"One Of" Underlying Structure
			Map To	Underlier ID	EUR-EXT-CPI	
			Set to "FPML"	Underlier ID Source	FPML	
		If Reference Rate > 1	If Reference Rate > 1 = "Basket"	Underlying Structure	Basket	"One Of" Underlying Structure
	Reference Rate Term Value	If Reference Rate = 1	Direct Map	Reference Rate Term Value	3	
		If Reference Rate > 1	No Mapping			
	Reference Rate Term Unit	If Reference Rate = 1	Direct Map	Reference Rate Term Unit	MNTH	
		If Reference Rate > 1	No Mapping			