Derivatives Service Bureau

Foreign Exchange : Option : Digital Option

UPI Product Definition

Version 3

Date	Status	Version	Revision Details
8 Aug 2022	Draft	1	Initial Version
26 Jan 2023	Draft	2	• Update example values in the Request and Record templates layout • Insert Underlier Name attribute and Derivation rules
06 Sep 2023	Draft	3	• Update Associated Documentation to include Best Practice Guidelines and FAQs. • Update Best Practice Guidelines to include the link to Best Practice Guidelines and FAQs.

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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

Each UPI Product Definition template links to reference documents where values will be maintained for the sake of consistency and ease of access e.g., Enumerations, Data Dictionary, Validation and Normalizations, etc.

These documents are made available for references as follows:

- UPI Enumerations Document can be found in the Enumerations section on the DSB website.
- UPI Product Definition Data Dictionary can be found in the Other Documents section on the DSB website.
- UPI Product Definition Validations and Normalizations Document can be found in the Other Documents section on the DSB website.
- UPI Underlier Input Method can be found in the Other Documents section on the DSB website.
- Best Practice Guidelines and FAQs can be found in the Other Documents section on the DSB website.
- Links to the relevant JSON templates can be found in the GitHub Environment Section on the DSB website.

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)	**F**	Foreign Exchange	
Attr #1	**Underlying Assets**	**T**	Spot	An option on an FX transaction in which two parties agree to buy one currency against selling another currency at an agreed price for settlement on the spot date
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

Attr #3	**Valuation method or trigger**	**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”
		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
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	DSB Product Definition Name
Foreign Exchange	Simple Exotic	Digital	Digital_Option

3 REQUEST TEMPLATE

This section describes the input message received by UPI service.

Template name	Template details	Release
Request.Foreign_Exchange.Option.Digital_Option.UPI.json	Initial version	Initial

Section	Attribute	Format	Cat	Example Value	Validation / Derivation
Header Section	Asset Class	Set	M	Foreign_Exchange	
	Instrument Type	Set	M	Option	
	Product	Set	M	Digital_Option	
	Level	Set	M	UPI	
Attribute Section	Underlier ID	Enum	M	EUR	Enumerated List
	Underlier ID Source	String	M	CCY	[CCY]
	Other Underlier ID	Enum	M	USD	Enumerated List
	Other Underlier ID Source	String	M	CCY	[CCY]
	Option Type	Enum	M	CALL	[CALL; PUTO; OPTL]
	Option Exercise Style	Enum	M	EURO	[AMER; BERM: EURO]
	Valuation Method or Trigger	Enum	M	Digital (Binary)	[Digital (Binary); Digital Barrier]
	Settlement Currency	Enum	M	EUR	Enumerated List
	Delivery Type	Enum	M	PHYS	[CASH; PHYS; OPTL]

3.1 Underlier Input Method

For products that has a Single Underlier, users have an option to select a Primary or Alternate Underlier, if available.

Title	Description	
Select Underlier ID Source	User is able to select a single required Underlier Source • Currency Pair [CCY]	
Input Underlier ID	CCY	This is validated against ISO Currency Code 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.

4 RECORD TEMPLATE

This section describes the record returned by the UPI service.

Version	Template name	Template details	Release
V.1	**Foreign_Exchange.Option.Digital_Option.UPI.V1.json**	Initial version	Initial

Section	Attribute	Format	Cat	Example Value	Derivation
Header Section	Asset Class	Set	M	Foreign_Exchange	
	Instrument Type	Set	M	Option	
	Product	Set	M	Digital_Option	
	Level	Set	M	UPI	
	Template Version	Integer	D	1	
Attribute Section	Notional Currency	Enum	M	EUR	Enumerated List
	Other Notional Currency	Enum	M	USD	Enumerated List
	Option Type	Enum	M	CALL	[CALL; PUTO; OPTL]
	Option Exercise Style	Enum	M	EURO	[AMER; BERM: EURO]
	Valuation Method or Trigger	Enum	M	Digital (Binary)	[Digital (Binary); Digital Barrier]
	Settlement Currency	Enum	M	EUR	Enumerated List
	Delivery Type	Enum	M	PHYS	[CASH; PHYS; OPTL]
Identifier Section	UPI	String	D	QZV9SHRJ8KZG	
	Status	String	D	New	[New; Updated; Deleted; Deprecated]
	Status Reason	String	D	<null>	
	Last Update Date Time	DtTm	D	2020-11-30T00:00:13	YYYY-MM-DDThh:mm:ss
Derived Section	Classification Type	String	D	HFTADP	See Derivation Rules
	Short Name	String	D	NA/O Dlg Call EUR USD	See Derivation Rules
	Underlier Name	String	D	EUR USD	See Derivation Rules
	Underlying Asset Type	String	D	Spot	Fixed Value
	CFI Option Style and Type	String	D	European-Call	See Derivation Rules
	CFI Delivery Type	String	D	[Cash; Physical; Elect at Exercise]	See Derivation Rules

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	HFTADP		
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	Foreign Exchange	Fixed Mapping	F
Underlying Assets	Spot	Fixed Mapping	T
Option Type / Style	PUTO/AMER	Mapped to =>	E
	PUTO/BERM	Mapped to =>	F
	PUTO/EURO	Mapped to =>	D
	CALL/AMER	Mapped to =>	B
	CALL/BERM	Mapped to =>	C
	CALL/EURO	Mapped to =>	A
	OPTL/AMER	Mapped to =>	H
	OPTL/BERM	Mapped to =>	I
	OPTL/EURO	Mapped to =>	G
Valuation Method or Trigger	Digital Barrier	Mapped to =>	G
	Digital (Binary)	Mapped to =>	D
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 + Valuation Method or Trigger + Option Type + Notional Currency + Other Notional Currency		
Example	NA/O Dig Call EUR USD		
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	Option	Fixed Abbreviation	O
Valuation Method or Trigger	Digital (Binary)	Fixed Abbreviation	Dig
	Digital Barrier	Fixed Abbreviation	DigBar
Option Type	PUTO; CALL; OPTL	Fixed Abbreviation	Put
	CALL	Fixed Abbreviation	Call
	OPTL	Fixed Abbreviation	O
Notional Currency	Notional Currency	Mapped Enumeration	e.g., USD, EUR, GBP
Other Notional Currency	Other 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**
Currency Pair	UPI record	Notional Currency / Other Notional Currency	EUR USD

4.2.4 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

4.2.5 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

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

The shortname abbreviation for option type – Put is “P” for rates option while in equity and foreign exchange, shortname abbreviation for the option type – Put is “Put”. Same as for Option Type – OPTL whereas in FX it is “O” and “Opt” for Rates and Equity.

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
Delivery Type	M	Delivery Type	Delivery Type
			CFI Delivery Type
Option Style	M	Option Exercise Style	Option Exercise Style
Option Type	C	Option Type	Option Type
Return, pricing method or payout trigger	M	Valuation Method or Trigger	Valuation Method or Trigger
Settlement Currency	C	Settlement Currency	Settlement Currency
Underlier ID	C	Underlier ID	Notional Currency
	C	Other Underlier ID	Other Notional Currency
Underlier ID source	C	Underlier ID Source	Not Required
	C	Other Underlier ID Source	Not Required
Underlier Type	M	Not Required	Underlying Asset Type

7 APPENDIX 2 - OTC ISIN-UPI MAPPING

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

ISIN Input Attributes	Mapping Logic	UPI Input Attributes	Sample UPI Values	Comments
Asset Class	Direct Map	Asset Class	Foreign_Exchange	
Instrument Type	Direct Map	Instrument Type	Option	
Use Case	Direct Map	Product	Digital_Option	
Level	Set to "UPI"	Level	UPI	
Notional Currency	Map To	Underlier ID	EUR	
	Set to “CCY”	Underlier ID Source	CCY	
Expiry Date	No Mapping			
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	Digital (Binary)	
Other Notional Currency	Map To	Other Underlier ID	USD	
	Set to “CCY”	Other Underlier ID Source	CCY	
Settlement Currency	Direct Map	Settlement Currency	EUR	
Delivery Type	Direct Map	Delivery Type	PHYS	
Price Multiplier	No Mapping			