ISDA SIMM™,[1] Methodology: Risk Data Standards
Version 1.~~43: 13~~44: 19 June 2017

1. Introduction

The rules for ISDA SIMM ("SIMM") have been described by ISDA as "ISDA SIMM Methodology". Whilst these rules are intended to be a definitive formal specification of the model, various industry participants might welcome some additional descriptions and clarifications to help with the practical implementation of the model.

This document aims to set complete standards for the details of risk calculation and data exchange, giving additional descriptions and clarifications of the risk factors, as well as worked example calculations.

As part of that, the document also proposes a common standard for interchange of SIMM risk between participants and others.

In all cases, the official rules are definitive, and take priority over this document in case of any discrepancy. This document is intended as clarification.

2. Common Risk Interchange Format (CRIF)

There is a strong need for a common way of describing risk on portfolios and trades. This is required both by market participants as part of the reconciliation process to resolve differences in calculated SIMM values, and also for IM calculation. This is very helpful primarily for:

- Market participants as part of the reconciliation process to resolve differences in calculated SIMM values.
- Third party vendors which aim to provide SIMM reconciliation or management services.
- ISDA member firms for back-testing, benchmarking and other validation processes.
- New (potentially smaller) firms in their on-boarding of the IM methodology.

The proposal is for a simple, robust format, which can be read by automated processes as well as being capable of manual inspection. The format is specified for the current set of risk factors, but can also easily be extended to handle new risk factors in future.

The objective is to have a format which is capable of achieving two different objectives – both risk reconciliation and the basis for IM calculation. Given risk data in this format, it should be straightforward

[1] Patent pending. This document is published by the International Swaps and Derivatives Association, Inc. (ISDA) and is protected by copyright and other proprietary intellectual property rights. It cannot be used, revised or distributed except solely for the purpose of a market participant's own commercial transactions or as otherwise provided for by ISDA in a written licensing agreement. If you are a service provider wishing to license ISDA SIMM™ or other ISDA intellectual property, please contact isdalegal@isda.org. This notice may not be removed.

and mechanical to calculate the IM of a portfolio, using only additional information from the SIMM Methodology document.

For portfolios including trades whose IM is calculated according to the "Schedule" (multiple of notional) approach, the CRIF file can also contain some non-risk data such as trade notionals and maturities so that it can be used to calculate and reconcile the total IM requirement, including both SIMM and Schedule IM.

2.1 Format overview

The format is a simple flat file, with rows separated by end-of-line markers, and columns separated by TAB characters (ASCII 9). Elements can be either textual, or numerical (represented as strings), and type can be context-dependent.

The first row of the file should be a header row which contains the name of the columns, with TAB-separation as usual.

Each additional row contains a single risk factor for a trade or portfolio.

The five keys for the risk factors are as follows:

- RiskType – string describing the type of risk factor, such as interest-rate risk, qualifying credit risk, etc. Examples include Risk_IRCurve (interest-rate delta), Risk_FX (FX risk), and so on. Other quantitative information can also be described with additional RiskTypes, such as "Notional", "PV" (for Schedule IM) and "Param_ProductClassMultiplier" (for add-ons and scaling).
- Qualifier – string description of the particular risk factor, such as currency (Interest Rate), issuer (qualifying credit), etc.
- Bucket – numerical bucket number of the qualifier (where applicable). This corresponds to the buckets described in SIMM Methodology for credit, equity and commodity risk factors. For instance, any position in a large-size developed market equity in the "Consumer, utilities" sector would have a Bucket value of 5.
- Label1 – tenor label describing the vertex of the risk factor, such as "3m", "5y", etc.
- Label2 – second tenor label used if the risk factor is a matrix, or to identify sensitivities from qualifying credit securitisations.

These keys should be fixed and immutable, but the allowed values are flexible and can evolve over time. Any risk, whether scalar, vector or matrix shaped, can be represented with these keys.

There are a further three columns to contain the amount of risk that there is:

- Amount – amount of the risk, in units of a given currency. Should be a number.
- AmountCurrency – currency of the "Amount" field. Should be a standard three-letter ISO currency code.

- AmountUSD – amount of the risk, expressed in USD. (This has the additional benefit of implying the effective FX rate used by the data-producer to convert between the amount currency and USD.)

Plus a further column which specifies the product class silo to which trades are assigned:

- ProductClass – a string identifier describing which product class the trade (or portfolio of trades) belongs to. Allowed values are "RatesFX" (meaning Rates or FX), "Credit", "Equity", or "Commodity". Note that if the trade is subject to the Schedule IM rather than SIMM, then the "RatesFX" value should not be used and instead Rates/FX trades must be described as either "Rates" or "FX" since the Schedule IM calculation requires distinguishing between the Rates and FX product classes, because they have different notional weightings. For SIMM the combined RatesFX product class is sufficient.

The above nine columns are the minimum required, but optional other columns are permitted and encouraged. The standard allows for any other further additional columns containing trade or portfolio identifiers and so forth as may be required by any user or context.

Other columns which might be useful include:

PortfolioID : an optional identifier to describe which portfolio / netting-set the sensitivities belong to.

TradeID : an optional identifier to describe which (confirmable) trade within a netting-set the sensitivities belong to.

PostRegulations : a comma-separated list of regulations that apply to that trade when posting Initial Margin. See below for a list of the main regulators.

CollectRegulations : a comma-separated list of regulations that apply to that trade when collecting Initial Margin.

Note: For avoidance of doubt, if a trade is subject to multiple regulations then users can supply its risk for each regulation on multiple separate lines with PostRegulations and CollectRegulations column populated with the respective regulation rather than as a comma separated list on the same entry line. If an entry in either PostRegulations or CollectRegulations is blank (or an empty entry, one or more spaces, or the strings "[]" or "[ ]") then that row's risk will be ignored/excluded from all jurisdictions for posting or collecting respectively. This is to allow both one-way CSAs, and also trades which are exempt from either posting or collecting. (Old-style format:) If the columns PostRegulations or CollectRegulations are not included in the file at all, then all trades should be included.

IMModel : the model or methodology to be used to calculate IM for the trade or portfolio. Should be "SIMM" or "Schedule".

ValuationDate : as-of date on which the valuations were performed, in ISO-standard "YYYY-MM-DD" format.

EndDate : final maturity date of the trade, in ISO-standard "YYYY-MM-DD" format. ValuationDate and EndDate are useful for determining the notional weighting to use in the Schedule IM calculation.

CounterpartyName, CounterpartyID, NettingSetNumber, etc : Additional grouping fields could be useful as necessary when mutually agreed between users of the format.

The suggested list of regulations to use when populating the PostRegulations and CollectRegulations columns is as follows:

Regulation	Region	Long name
APRA	Australia	Australian Prudential Regulation Authority
CFTC	USA	Commodity Futures Trading Commission
ESA	EU	European Supervisory Authorities
FINMA	Switzerland	Financial Market Supervisory Authority
KFSC	South Korea	Korean Financial Services Commission
HKMA	Hong Kong	Hong Kong Monetary Authority
JFSA	Japan	Japanese Financial Services Agency
MAS	Singapore	Monetary Authority of Singapore
OSFI	Canada	Office of the Superintendent of Financial Institutions
RBI	India	Reserve Bank of India
SEC	USA	Securities Exchange Commission
SANT	South Africa	South African National Treasury
USPR	USA	US Prudential Regulators

Where dates are used in CRIF files, they should be formatted according to the ISO 8601 standard, which can be described as "YYYY-MM-DD", so that 1 September 2016 would be "2016-09-01". This format is unambiguous, and has useful sorting properties.

In summary, the five headers needed to describe risk factor sensitivities are:

- *RiskType* – string describing the type of risk factor:
  - Interest rate : Risk_IRCurve, Risk_Inflation, Risk_XCcyBasis, Risk_IRVol, Risk_InflationVol
  - Credit Qualifying : Risk_CreditQ, Risk_CreditVol, Risk_BaseCorr
  - Credit Non-Qualifying : Risk_CreditNonQ, Risk_CreditVolNonQ
  - Equity : Risk_Equity, Risk_EquityVol
  - Foreign exchange (FX) : Risk_FX, Risk_FXVol
  - Commodity : Risk_Commodity, Risk_CommodityVol
  - Schedule IM: Notional, PV (present value of the trade, including all cashflows strictly after the ValuationDate)
  - Notional Add-Ons and Multiplicative Scaling: Param_ProductClassMultiplier, Param_AddOnNotionalFactor, Param_AddOnFixedAmount
- *Qualifier*:
  - All Interest Rate types: The ISO currency name, e.g., USD, EUR, SEK, and so on.
  - Risk_CreditQ, Risk_CreditVol: ISIN. This is a representative ISIN for the issuer/seniority combination.

- Risk_BaseCorr: index family name, such as “CDX IG”, “iTraxx Main”, and so on
- All Credit Non-Qualifying types: ISINs, except for Indices and asset underliers with no ISINs, which would use a SIMM Crowdsourcing Utility-defined Dummy ISIN.
- All Equity types: ISIN for all equities, except for Indexes, Funds and ETFs which have a user-defined string description.
- Risk_FX : Currency for delta, as an ISO Currency code, such as “EUR” or “CHF”.
- Risk_FXVol : currency pair for vega, eg “EURJPY” or “SEKCHF” for vega (two ISO currency codes).
- Commodity: String description of the commodity (see Appendix 1).

- *Bucket*:
  - Risk_IRCurve: Integer code. A value of 1 (meaning Bucket #1) corresponds to regular vol currencies, a value of 2 corresponds to low-volatility currencies, and 3 corresponds to high-volatility currencies. If other categories of currencies are introduced, they will be given subsequent integer codes.
  - Risk_Inflation, Risk_XCcyBasis, Risk_IRVol : unused
  - Risk_CreditQ, Risk_CreditVol: Integer code from 1-12 or the string “Residual”, corresponding to the SIMM buckets for qualifying credit. Bucket values run from 1 (IG Sovereigns) to 12 (HY Parastatals) plus “Residual”.
  - Risk_BaseCorr: unused
  - All Credit Non-Qualifying types: Integer code from 1-2 or the string “Residual”, corresponding to the SIMM buckets for non-qualifying credit. Bucket values run from 1 (IG RMBS/CMBS) to 2 (HY RMBS/CMBS) plus “Residual”.
  - All Equity types: Integer code from 1-~~11~~12 or the string “Residual”, corresponding to the SIMM buckets for equity. Bucket values run from 1 (Large emerging-markets “Consumer, utilities”) to ~~11 (~~12 (Volatility Indexes~~, Funds, ETFs~~) plus “Residual”.
  - All Commodity types: Integer code from 1-~~16~~17, corresponding to the SIMM buckets for commodity. Bucket values run from 1 (Coal) to ~~16 (Other~~17 (Indexes).
- *Label1:*
  - Risk_IRCurve, Risk_IRVol, Risk_InflationVol: The risk tenor *T*, for *T* in [“2w”, “1m”, “3m”, “6m”, “1y”, “2y”, “3y”, “5y”, “10y”, “15y”, “20y”, “30y”]
  - Risk_Inflation, Risk_XCcyBasis: Unused
  - Risk_BaseCorr: Unused
  - All other credit types: The risk tenor *T*, for *T* in [“1y”, “2y”, “3y”, “5y”, “10y”]
  - Risk_Equity: Unused
  - Risk_FX: Unused
  - Risk_Commodity: Unused
  - Risk_EquityVol, Risk_FXVol, Risk_CommodityVol: The vol-tenor (option expiry) *T*, for *T* in [“2w”, “1m”, “3m”, “6m”, “1y”, “2y”, “3y”, “5y”, “10y”, “15y”, “20y”, “30y”]
- *Label2:*
  - Risk_IRCurve: The subcurve name. Can be “OIS”, “Libor1m”, “Libor3m”, “Libor6m”, “Libor12m”, or (for USD only) “Prime” or “Municipal”.
  - Risk_CreditQ: the currency of the payment corresponding to the risk.
  - Also useful for future expansion, such as vega becoming a fully two-dimensional risk

These first five keys should be fixed and immutable, but the allowed values are flexible and can evolve over time. The other three fields (*Amount*, *AmountCurrency*, *AmountUSD*) have fixed names, but their content is obviously variable and are the numbers used for reconciliation of risk factor sensitivities.

The first five keys define a five-tuple which gives a precise description of any risk. It is allowed for the file to contain more than one instance of the same five-tuple. (For instance, if the file is listing risk broken out by TradeID, then the five-tuple ("Risk_IRCurve", "USD", 1, "5y", "") [which means 5y USD Interest Rate Delta] could easily occur several times in the file, if there are several USD trades in the portfolio.

If we use this simple format, given the use of strings, we need to define explicit conventions on the precision and format specification for the numbers.

2.2 Interest Rates

For interest-rate risk, the five keys and the amount value are used in the following way:

Label	**Value**
RiskType	"Risk_IRCurve"
Qualifier	Currency of curve, such as "USD", "EUR", etc. Use standard ISO codes.
Bucket	Integer which can be: 1 (Regular), 2 (Low volatility), or 3 (High volatility)
Label1	Tenor: "2w", "1m", "3m", "6m", "1y", "2y", "3y", "5y", "10y", "15y", "20y", or "30y"
Label2	Sub curve name. Can be "OIS", "Libor1m", "Libor3m", "Libor6m", "Libor12m", or (for USD only) "Prime" or "Municipal".
Amount	Sensitivity value in amount currency units, quoted per 1bp increase in par market spot rate (Cash rates for "2w", "1m", "3m" and "6m", swap rates for "1y" and longer). Show risk separately for swap rates against different references, eg Libor3m or Libor6m or OIS. Intra-currency spread risk, for example 3m/6m, should be converted into a combination of outright Libor3m and Libor6m risks. Cross-currency basis swap risk can be ignored. Where the source system risk needs to be rebucketed onto the standard SIMM tenors, this should be done with linear allocation. For example, sensitivity to the 7y tenor should be allocated 60% to 5y and 40% to 10y (100% x 7y = 60% x 5y + 40% x 10y). Risk below 2w or beyond 30y should be allocated using flat extrapolation. Valuation may also be sensitive to choice of discounting, according to how trades are collateralised. The recommended best practice is for IR delta to include the risk of collateral funding adjustments. For example, a USD swap trade collateralised in EUR should show some risk to the EUR curve. It is acknowledged that this may be difficult for some market participants, so it is permitted to use the unadjusted delta. When computing deltas for instruments subject to optionality, participants should assume that delta is calculated keeping constant the relevant standard volatility and skew for the market concerned, which might be log-normal or normal volatility, sticky strike or sticky delta, etc.

For inflation, the values for the six labels have the following values:

Label	Value
RiskType	"Risk_Inflation"
Qualifier	Currency of inflation curve, such as "USD" or "EUR". Use standard ISO codes.
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1bp parallel increase in inflation zero coupon swap market rates. Add up over different inflation indexes in the same currency.

For cross-currency basis swap risk, the values for the six labels have the following values:

Label	Value
RiskType	"Risk_XCcyBasis"
Qualifier	Currency of the non-USD curve, such as "EUR" or "JPY". Use standard ISO codes.
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1bp parallel increase in the cross-currency basis spreads against USD Libor flat. Risk should be to an (idealized) market-standard spread which is on the non-USD 3m Libor leg against USD 3m Libor flat. If the market standard has any different conventions, the following adjustments may need to be applied: (1) If the quoted spread is non-USD flat against USD Libor plus the spread, then change the sign of the risk (2) If the quoted spread is against EUR Libor flat, rather than USD Libor flat, then this currency's basis risk is unchanged, but the EUR cross-currency basis risk should be modified by subtracting this currency's basis risk (3) If the Libor is 6m rather than 3m, no adjustment is needed (4) If the quoted spread has a contract with a resetting notional, no adjustment needs to be performed (5) If the quoted rate is a fixed rate, rather than a spread to Libor, then no adjustment needs to be performed. Risk should be added up over all tenors to give a single value.

2.3 Credit Qualifying

For qualifying credit delta risk, the six labels take these values:

Label	Value
RiskType	"Risk_CreditQ"
Qualifier	ISIN code of a representative security of the given issuer for the given seniority. Must be a string of the form "ISIN:" plus the 12-character ISIN string, such as "ISIN:XS1081333921".
Bucket	Integer between 1 and 12, or the string "Residual"
Label1	Tenor "1y", "2y", "3y", "5y", or "10y"
Label2	Currency of the payment corresponding to the credit risk (as opposed to the currency of the reference obligations embedded in the ISIN). This is to identify Quanto CDS from non-Quanto CDS trades. Use standard ISO codes. Must be provided. [Previously used the string "Sec", but this is now obsolete, though the combination "Sec,Ccy", such as "Sec,EUR" is allowed for backwards compatibility reasons.]
Amount	Sensitivity value in amount currency units, quoted per 1bp increase in par credit default swap spread (standard spreads preferred, but natural spreads acceptable). Add up over all credit spread curves for the issuer, which may differ by seniority, documentation (such as restructuring clause), or currency. Index or bespoke basket delta should be allocated back to the individual single names.

For base correlation risk, the corresponding values are:

Label	Value
RiskType	"Risk_BaseCorr"
Qualifier	Index family name, such as "CDX IG", "iTraxx Main", "CDX HY" or "iTraxx XO". See Appendix 2 for a non-exhaustive list of some index families.
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1% additive increase in base correlation levels for all base tranches. Add up over all base tranches and all index instances for the same index family. Bespoke basket correlation risk should be allocated back to liquid index correlation risk.

2.4 Credit Non-Qualifying

For non-qualifying credit risk, the six labels take these values:

Label	Value
RiskType	"Risk_CreditNonQ"
Qualifier	Dummy ISIN from IBA if available, or else internal nomenclature
Bucket	Integer between 1 and 2 or the string "Residual"
Label1	Tenor "1y", "2y", "3y", "5y", or "10y"
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1bp increase in par credit default swap spread (standard spreads preferred, but natural spreads

	acceptable). Add up over all credit spread curves for the tranche if applicable. Risk to non-qualifying tranches is not decomposed to single name risk.

2.5 Equity

For equity risk, the six labels take these values:

Label	Value
RiskType	"Risk_Equity"
Qualifier	ISIN for single-stock equities, must be of the form "ISIN:GB0001383545". Should be a user-defined string description for bucket 11 (Indexes, Funds, ETFs).
Bucket	Integer between 1 and 12 or the string "Residual".
Label1	Unused, blank
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1% increase in spot equity price. Can be added up for the same equity over different trading venues. Dividend risk is not included. Sensitivities to equity indices, funds and ETFs can be handled in one of two ways: either (standard preferred approach) the entire delta and can be put into the "Indexes, Funds, ETFs" Equity bucket, or (alternative approach if bilaterally agreed) the delta can be allocated back to individual equities. The choice between standard and alternative approach should be made on a portfolio-level basis. Delta sensitivities to bespoke baskets should always be allocated back to individual equities. Sensitivity to volatility indexes (such as VIX) should primarily be put into the Risk_EquityVol risk type, with only any residual delta to stock price movements (which may be zero) put into Risk_Equity.

2.6 Commodity

For commodity risk, the six labels take these values:

Label	Value
RiskType	"Risk_Commodity"
Qualifier	String description of the commodity (see Appendix 1 for details)
Bucket	Integer between 1 and ~~16~~17
Label1	Unused, blank
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1% increase in commodity price. Should be added up along the forward curve – assuming a "parallel" shock of 1% increase in all forward prices. Index delta can either (standard approach) be put into bucket ~~16 (Other~~17 (Indexes), or alternatively (advanced approach) be allocated back to the individual single names. Bespoke basket delta should always be allocated back to the individual commodity names.

2.7 Foreign Exchange

For foreign exchange risk, the six labels take these values:

Label	Value
RiskType	"Risk_FX"
Qualifier	Currency of the FX position, eg "EUR" or "CHF". Can be equal to the calculation currency. Should be a standard ISO code.
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Sensitivity value in amount currency units, quoted per 1% increase in worth of the currency given in Qualifier. Needs to be quoted for the calculation currency as well. There are two equivalent definitions for the calculation currency FX risk. Either: (a) sensitivity of the portfolio's value, when quoted in an alternative calculation currency, to a 1% increase in worth of the original calculation currency (with that sensitivity converted back into amount currency units), or (b) one per cent of the total PV of the trade's value in calculation currency, less the sum of the other FX risks (converted into amount currency units). The total sum of all FX risks should be one per cent of the total PV of the portfolio/trade. See examples for more details.

2.8 Vega

There are different vega types for each asset type. The options available are described in the following table

RiskType	Qualifier	Bucket	Label1	Label2	Amount
Risk_IRVol	Currency	Unused	Option expiry tenor, as for Risk_IRCurve	Unused	(*Vega* x *Volatility*), in amount currency units
Risk_InflationVol	Currency	Unused	Option expiry tenor, as for Risk_IRCurve, using the last inflation observation date as the expiry.	Unused	(*Vega* x *Volatility*), in amount currency units
Risk_CreditVol	As per Risk_CreditQ. **Indexes TBD**	As for Risk_Credit (use "Residual" for cross-sector indexes)	Option expiry tenor, as for Risk_CreditQ	Unused	Ditto
Risk_EquityVol	As per Risk_Equity	As for Risk_Equity	Option expiry tenor	Unused	Log-normal Vega in

					amount currency units
Risk_CommodityVol	As per Risk_Commodity	As for Risk_Commodity (use 17 for indexes)	Option expiry tenor	Unused	Ditto
Risk_FXVol	Currency pair, such as "EURUSD", "USDJPY". Can be in either order.	Unused	Option expiry tenor	Unused	Ditto

For Interest Rates (including inflation) and Credit the amount is equal to the product of the vega and the volatility, which is then added up over the underlying swap maturities, so that the reported vega is a column of numbers which are equal to the sums along each row of the matrix (over all underlying swap tenors, or over all underlying inflation swaptions with the same option expiry).

For equity, commodity, and FX, the reported vega is a column of numbers, being the log-normal volatility for each expiry in the set "2w", "1m", "3m", "6m", "1y", "2y", "3y", "5y", "10y", "15y", "20y", or "30y" (same tenor list as for Risk_IRCurve).

Where the source system vega risk needs to be rebucketed onto the standard SIMM expiries, this should be done with linear allocation on expiries applied to the "Amount" values (Vega times Volatility for IR/Credit; Vega for Equity, Commodity, FX). See 3.9 for an example.

For indexes and baskets, please note the following special cases:

- Credit (qualifying) : vega to credit indexes should not be allocated back to single-name volatility risk, but should be put completely into the relevant bucket, or "Residual" bucket for cross-sectoral indexes.
- Equity index : vega to equity indexes/funds/ETFs should not be allocated back to index constituents, but should be put completely into bucket 11 ("Indexes, Funds, ETFs").
- Equity bespoke basket : vega to equity bespoke baskets should be allocated back to the basket constituents, and those vegas put into the relevant buckets. Note that not all institutions may be able to perform the allocation of vega for equities as described, however, it is the preferred approach.
- Equity volatility index : the risk to a volatility index (such as VIX) should be placed into the Risk_EquityVol risk type~~.~~ using bucket 12 ("Volatility Indexes"). See Appendix 3 for a non-exhaustive list of equity volatility indexes.
- Commodity index : vega to commodity indexes should not be allocated back to index constituents, but should be put completely into ~~the relevant bucket, or bucket 16 ("Other") for cross-sectoral indexes.~~bucket 17 ("Indexes").

2.9 Schedule IM

For each trade subject to Schedule IM, the CRIF file should contain two rows with RiskTypes "Notional" and "PV", populated as follows:

Label	Value
RiskType	"Notional"
Qualifier	Unused for Schedule IM purposes. For Notional add-ons, the qualifier should be the ISDA Product Name (see next section for details)
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Notional amount of the trade in units of AmountCurrency (which can be the currency of the trade, or some other currency). AmountUSD should be the notional in USD
IMModel	should be set to "Schedule"
ValuationDate	date of the valuation run, in ISO 8601 standard, such as "2016-09-01" for 1-Sep-2016.
EndDate	maturity date of the trade, in the same format as ValuationDate
ProductClass	should be "Rates", "FX" (note: not "RatesFX"), "Credit", "Equity", "Commodity" or "Other" for Schedule IM purposes. Can be blank for Notional add-ons.

Note that the "Notional" RiskType may also appear in respect of Notional add-ons, see section 2.10 below.

The RiskType "PV" has similar values, except for "Amount" and "AmountUSD":

Label	Value
RiskType	"PV"
Qualifier	Unused, blank
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Net present value of the trade, including all cashflows strictly after the ValuationDate, in units of AmountCurrency (which can be the currency of the trade, or some other currency). AmountUSD should be the PV in USD.
IMModel, ValuationDate, EndDate, ProductClass	As for "Notional"

2.10 Notional Add-Ons, Multiplicative Scaling and Fixed Add-Ons

To allow for regulator-specified notional add-ons and multiplicative scaling, there are three additional RiskTypes which give the necessary parameters. These RiskTypes are "Param_ProductClassMultiplier", "Param_AddOnNotionalFactor" and "Param_AddOnFixedAmount".

The first of these creates a multiplier which is used to scale the SIMM amount in a particular product class.

Label	**Value**
RiskType	“Param_ProductClassMultiplier”
Qualifier	Product class, which is one of "RatesFX", "Credit", "Equity", or Commodity"
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Scale factor. For example, 1.1, means "multiply by 1.1"
AmountCurrency	Ignored
AmountUSD	Should be the same as Amount

The second creates a factor which is applied to the notional of relevant trades and increases the SIMM by that fraction of their total notional.

Label	**Value**
RiskType	“Param_AddOnNotionalFactor”
Qualifier	Product Name, which is a short name to be provided by ISDA when required, such as "FlexiCallOption"
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Percentage add-on. For example, 5 means "5% of notional"
AmountCurrency	Ignored
AmountUSD	Should be the same as Amount

The third creates an add-on to SIMM of a fixed amount of a currency.

Label	**Value**
RiskType	“Param_AddOnFixedAmount”
Qualifier	Unused, blank
Bucket	Unused, blank
Label1	Unused, blank
Label2	Unused, blank
Amount	Amount of the fixed add-on in terms of AmountCurrency units. For example: 10,000,000 to represent 10 million currency units.
AmountCurrency	The currency units of the fixed amount. Should be a 3-letter ISO currency code.
AmountUSD	The fixed amount equivalent value in USD, converted into USD at the current FX rate.

Then, for all trades in (eg) "FlexiCallOption", there would be a row with *RiskType* "Notional" which would also have the Product Name ("FlexiCallOption") as its *Qualifier*, “SIMM” as its *IMModel*, the appropriate values in *PostRegulations* and *CollectRegulations*. This allows the risk and the rate to be linked for the add-on calculation. Note that unlike the Schedule calculation, a “PV” row is not required

for the add-on calculation. These new RiskTypes could often be at the start of the CRIF file, before the actual risks, but there is no requirement to do so.

Since these rows also have *PostRegulations* and *CollectRegulations* as columns, this would potentially allow the parameters to be different for different regulators, which might be required.

3. Some examples

3.1 Interest-rate swap : 5y USD Interest rate par swap, we receive fixed on USD 10 million.

The risk is -4,881 USD per 1bp increase in the 5y par swap rate, so the file contents would be

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
RatesFX	Risk_IRCurve	USD	1	5y	Libor3m	-4,881

3.2 Inflation swap : 7y USD CPI inflation zero coupon swap, we receive fixed on USD 10 million

The 7y inflation risk is -6,968, which is allocated to inflation risk in its entirety since SIMM uses a flat inflation rate for each currency as a risk factor. The relevant lines of the file would show:

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
RatesFX	Risk_Inflation	USD				-6,968

3.3 Credit default swap : 5y CDS on General Electric Co., we buy protection on USD 10 million.

The CDS risk is 4,939 USD per 1bp increase in the standard CDS spread. The file has:

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
Credit	Risk_CreditQ	ISIN: XS1081333921	3	5y	USD	4,939

3.4 CREDIT NON-QUALIFYING EXAMPLE TO BE PROVIDED

3.5 Equity option : 1y at-the-money Call option on FTSE100 index, on GBP 10 million notional (1526.655 units of index).

The equity spot price is 6,550.27, and the equity delta is equivalent to 854.161 units of index (56% delta), which in GBP cash terms is GBP 5,594,785. Thus a 1% increase in the equity price would be worth GBP 55,948. Given a GBP/USD fx rate of 1.5103, gives a USD equity risk of USD 84,498.

The equity vega is GBP 39,448 for a 1% increase in ATM log-normal volatility, which is simply converted into the amount currency as USD 59,578.

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
Equity	Risk_Equity	FTSE100	11			84,498
Equity	Risk_EquityVol	FTSE100	11	1y		59,578

Note that because this is an equity index, it goes into bucket 11 (“Indexes, Funds, ETFs”), and the qualifier is a simple user-defined text string, rather than an ISIN code.

3.6 Commodity option: 3m Call option on Gold, on 10,000oz notional, strike 1185 USD/oz.

The Gold spot price is 1187, and the option delta is USD 5,571 per unit increase in the gold price (also described as a delta of 5,571oz). Thus a 1% increase in the gold price would be worth USD 66,124.

The vega is USD 23,754 for a 1% increase in the ATM Black-Scholes volatility, which does not need further processing.

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
Commodity	Risk_Commodity	Precious Metals Gold	12			66,124
Commodity	Risk_CommodityVol	Precious Metals Gold	12	3m		23,754

3.7 FX forward #1 : Off market 1y FX forward, where we receive USD 10 million, and pay EUR 8 million.

The EUR/USD FX (today) rate is 1.149575. The PV of this position is USD 744,484, with a EUR/USD FX delta of EUR -8,030,825 (equivalent to a USD delta of USD +9,232,035).

Some firms employ the concept of "component PV" or "equivalent position". Given an FX delta to a certain currency, the component PV is the amount of cash in that currency that has the same FX delta. In this example, the EUR component PV is EUR -8,030,825, and the USD component PV is USD 9,976,518 (which is the sum of the total PV plus the USD delta).

The file contents would be:

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
RatesFX	Risk_FX	EUR				-92,320
RatesFX	Risk_FX	USD				99,765

Note that the EUR delta has been converted into amount currency units (USD), and that the USD delta is included, even though it is the calculation currency. It should always be the case that the sum of Risk_FX over the various currencies is one per cent of the trade's value (99,765-92,320 = 7,445 = 1% x 744,484).

3.8 FX forward #2 : Off market 1y FX forward, where we receive GBP 10 million, and pay EUR 12 million.

The GBP/USD today FX rate is 1.510296. The PV of this position is USD 1,190,303. There are two deltas: EUR/USD Delta = EUR -12,046,237 (equivalent to a USD delta of USD +13,848,052), and GBP/USD Delta = GBP +9,957,220 (equivalent to a USD delta of USD -15,038,354).

For comparison, the component PVs are EUR -12,046,237 and GBP +9,957,220.

The file contents in this case are:

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
RatesFX	Risk_FX	EUR				-138,481
RatesFX	Risk_FX	GBP				150,384

RatesFX	Risk_FX	USD				0

In this case, the total USD delta is zero (so it does not need to be included in the file). Also the sum of all the deltas is equal to 11,903, which again is one per cent of the total PV.

3.9 Interest Rate Vega example : Bermudan swaption 2% coupon, 10y no call 2y, our option to stop paying fixed

A simple example vega matrix for this trade is in terms of normal volatility risk (USD per 1bp/year normal vol):

	6M	1Y	2Y	3Y	4Y	5Y	6Y	7Y	8Y	9Y
18M	0	0	0	0	0	0	0	0	18	18
21M	0	0	0	0	0	0	0	0	0	0
2Y	0	0	0	0	0	0	0	172	885	0
3Y	0	0	0	0	0	0	166	342	179	0
4Y	0	0	0	0	0	125	689	171	0	0
5Y	0	0	0	0	121	249	130	0	0	0
6Y	0	0	0	91	491	122	0	0	0	0
7Y	0	0	84	174	90	0	0	0	0	0
8Y	0	58	339	86	0	0	0	0	0	0
9Y	88	59	60	0	0	0	0	0	0	0
10Y	90	0	0	0	0	0	0	0	0	0

The meaning of this table is that the swaption expiries are in the vertical axis on the left-hand side, and the maturities of the underlying swap are in the horizontal axis along the top. For instance, the 2y x 8y point (with vega of USD 885) corresponds to an option, which expires in 2 years, on an 8 year swap. This vega matrix is the raw input from the example firm's risk management system, and the row and column tenor labels do not yet match the SIMM standards. The actual normal volatility levels (in bp/year) are:

	6M	1Y	2Y	3Y	4Y	5Y	6Y	7Y	8Y	9Y
18M	74.1	79.5	85.8	89.6	90.2	91.2	91.0	90.5	90.1	89.6
21M	76.9	84.3	88.6	90.9	91.5	91.8	91.5	91.0	90.5	90.0
2Y	78.9	88.1	90.7	91.7	92.1	91.9	91.5	91.0	90.5	90.0
3Y	102.0	97.2	95.8	94.8	93.9	92.9	92.3	91.7	91.1	90.6
4Y	103.8	99.2	96.4	95.1	94.1	93.2	92.4	91.7	91.0	90.3
5Y	102.3	100.1	96.2	94.9	93.9	93.0	92.2	91.4	90.6	89.8
6Y	101.0	99.2	95.8	94.2	92.9	91.6	90.7	89.8	88.9	88.1
7Y	100.2	98.1	95.2	93.3	91.6	90.0	89.0	88.1	87.1	86.2
8Y	97.6	96.0	93.3	91.4	89.6	87.9	86.9	85.9	85.0	84.0
9Y	95.3	93.8	91.2	89.3	87.4	85.7	84.7	83.7	82.8	81.8
10Y	94.4	93.0	89.8	87.8	85.9	84.2	83.2	82.2	81.3	80.3

We then multiply the vegas by the volatilities and add up along each row to get a single column of vega:

18M	3,235

21M	0
2Y	95,745
3Y	62,990
4Y	90,994
5Y	46,505
6Y	65,361
7Y	32,475
8Y	45,057
9Y	19,393
10Y	8,496

This is then re-gridded onto the SIMM standard tenor labels for interest-rates:

3m	0
6m	0
1y	1,618
2y	97,363
3y	108,487
5y	185,677
10y	77,107
15y	0
20y	0
30y	0

The file contents for this risk would be:

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
RatesFX	Risk_IRVol	USD		1y		1,618
RatesFX	Risk_IRVol	USD		2y		97,363
RatesFX	Risk_IRVol	USD		3y		108,487
RatesFX	Risk_IRVol	USD		5y		185,677
RatesFX	Risk_IRVol	USD		10y		77,107

Note that numbers in this example have been rounded to the nearest integer at each stage. **3.10 FX Vega example :** FX Option, 3m call on USD/JPY, call USD 10 million, struck at 117.484.

The USD/JPY FX 3m vega is JPY 2,325,092 (USD 19,768) for a 1% increase in log-normal volatility.

The file rows for this position would just be:

ProductClass	RiskType	Qualifier	Bucket	Label1	Label2	Amount
RatesFX	Risk_FXVol	USDJPY		3m		19,768

3.11 Schedule IM trade: interest rate swap, EUR 10 million notional, maturing 1-Feb-2023.

As of 14-Jul-2014, the relevant file entries for this trade would be (omitting blank columns such as Qualifier, Bucket, Label1, Label2 for reasons of space):

Valuation Date	TradeID	EndDate	Product Class	IMModel	RiskType	Amount	Amount Currency	AmountUSD
2016-07-14	A12345	2023-02-01	Rates	Schedule	Notional	10,000,000	EUR	11,032,500
2016-07-14	A12345	2023-02-01	Rates	Schedule	PV	-22,546	EUR	-24,874

The Schedule IM calculation for this trade would then compare ValuationDate and EndDate, determine that the time to maturity is more than 5 years, and so apply a multiplier of 4% (corresponding to "Interest rate: 5+ year duration") to the notional, to give a Gross IM of USD 441,300.

3.12 Total file

Risk can be aggregated (added up) where it has the same keys, including any trade identifier keys (where present). Any row which represents a zero risk can be dropped from the file. Otherwise rows are simply stacked one on top of another. For example, suppose we had a portfolio of all the example trades in sections 3.1 - 3.10, then the total file would look like:

Product Class	RiskType	Qualifier	Bucket	Label1	Label2	Amount	Amount Currency	Amount USD
RatesFX	Risk_IRCurve	USD	1	5y	Libor3m	-4,881	USD	-4,881
RatesFX	Risk_Inflation	USD				-6,968	USD	-6,968
Credit	Risk_CreditQ	ISIN:XS1081333921	3	5y	USD	4,939	USD	4,939
Equity	Risk_Equity	FTSE100	11			84,498	USD	84,498
Equity	Risk_EquityVol	FTSE100	11	1y		59,578	USD	59,578
Comm-odity	Risk_Commodity	Precious Metals Gold	12			66,124	USD	66,124
Comm-odity	Risk_CommodityVol	Precious Metals Gold	12	3m		23,754	USD	23,754
RatesFX	Risk_FX	EUR				-230,801	USD	-230,801
RatesFX	Risk_FX	USD				99,765	USD	99,765
RatesFX	Risk_FX	GBP				150,384	USD	150,384
RatesFX	Risk_IRVol	USD		1y		1,618	USD	1,618
RatesFX	Risk_IRVol	USD		2y		97,363	USD	97,363
RatesFX	Risk_IRVol	USD		3y		108,487	USD	108,487
RatesFX	Risk_IRVol	USD		5y		185,677	USD	185,677
RatesFX	Risk_IRVol	USD		10y		68,611	USD	77,107
RatesFX	Risk_FXVol	USDJPY		3m		19,768	USD	19,768

Note that the FX risk has been aggregated currency-by-currency over its various contributions.

The data in this format enjoy several desirable features:

- Straightforward basis for comparison of risks between participants
- Data is prepared for SIMM calculation itself. The "Amount" column corresponds exactly to the net sensitivities of the SIMM rules. It only remains to multiply by the respective risk weight and apply the variance-covariance formulas.
- Provides both a cross-check of and the ability to crowd source the link between Qualifier and Bucket.

3.13 Notional Add-Ons and Multiplicative Scaling : Example

The example has 3 trades, and two regulators, Reg1 and Reg2.

There are also have some hypothetical Rates trade types: FlexiCallOption (or just FlexiOption), FlexiDigitalOption, and FlexiBarrierOption.

	Product	**Reg1 treatment**	**Reg2 treatment**
Trade1	FlexiBarrierOption	SIMM, no add-on	IM Schedule as "Other"
Trade2	FlexiDigitalOption	SIMM + 5% add-on	IM Schedule as "Other"
Trade3	FlexiCallOption	SIMM + 4% add-on	SIMM + 3% add-on as a FlexiOption

Reg1 and Reg2 also require a 1.1 multiplier for RatesFX ProductClass.

Then the CRIF file (ignoring some columns) would look like:

trade ID	RiskType	Qualifier	Bucket	Label1	Label2	Amount	IM Model	Collect Regulations	Post Regulations	Product Class
	Param_Product-ClassMultiplier	RatesFX				1.1		Reg1	Reg2	
	Param_AddOn-NotionalFactor	FlexiDigitalOption				5		Reg1		
	Param_AddOn-NotionalFactor	FlexiCallOption				4		Reg1		
	Param_AddOn-NotionalFactor	FlexiOption				3			Reg2	
1	Risk_IRCurve	USD	1	1Y	Libor3m	327	SIMM	Reg1		RatesFX
1	Notional					10,000,000	Schedule		Reg2	Other
1	Notional	FlexiBarrierOption				10,000,000	SIMM	Reg1		
1	PV					1,021	Schedule		Reg2	Other
2	Risk_IRCurve	USD	1	1Y	Libor3m	569	SIMM	Reg1		RatesFX
2	Notional	FlexiDigitalOption				20,000,000	SIMM	Reg1		
2	Notional					20,000,000	Schedule		Reg2	Other
2	PV					4,027	Schedule		Reg2	Other
3	Risk_IRCurve	USD	1	1Y	Libor3m	1,234	SIMM	Reg1	Reg2	RatesFX
3	Notional	FlexiCallOption				30,000,000	SIMM	Reg1		
3	Notional	FlexiOption				30,000,000	SIMM		Reg2	

Note that the 8th row (FlexiBarrierOption) is disregarded in the IM calculation since Param_AddOnNotionalFactor is not defined for FlexiBarrierOption. IM will be the same if another row is added to define Param_AddOnNotionalFactor for FlexiBarrierOption explicitly as 0.

Appendix 1 : Commodity names

The following table lists standardised Commodity names to be used as the Qualifier for commodity price and volatility risk. Risk from different sources to the same Commodity name can be netted.

Commodity Name	Example Contract	Bucket
Coal Americas	Powder River Basin Coal (Platts) Futures	1
Coal Europe	NYMEX Coal (API2) CIF ARA (ARGUS-McCloskey) Futures	1
Coal Africa	NYMEX Coal (API4) FOB Richards Bay (ARGUS-McCloskey) Futures	1
Coal Australia	NYMEX Coal (API5) FOB Newcastle (Argus/McCloskey) Futures	1
Crude oil Americas	Light Sweet Crude Oil (WTI)	2
Crude oil Europe	Brent Crude Oil	2
Crude oil Asia/Middle East	DME Oman Crude Futures Contract (OQD)	2
Light Ends Americas	RBOB Gasoline Physical Futures	3
Light Ends Europe	Premium Unleaded Gasoline 10ppm FOB Rotterdam Barges (Platts) Futures	3
Light Ends Asia	Singapore Mogas 92 Unleaded (Platts) Future (SMT)	3
Middle Distillates Americas	NY Harbor ULSD Futures	4
Middle Distillates Europe	Low Sulphur Gasoil Futures	4
Middle Distillates Asia	Singapore Gasoil Futures (SWS)	4
Heavy Distillates Americas	Gulf Coast No. 6 Fuel Oil 3.0% (Platts) Futures	5
Heavy Distillates Europe	Fuel Oil 3.5% FOB Rotterdam Barges Future (BAR)	5
Heavy Distillates Asia	Fuel Oil 180 CST Singapore Future (SZS)	5
NA Natural Gas Gulf Coast	NYMEX Henry Hub Natural Gas Futures	6
NA Natural Gas North East	TETCOM3 Natural Gas Forward	6
NA Natural Gas West	SoCal Natural Gas Forward	6
EU Natural Gas Europe	ICE UK Natural Gas Futures	7
NA Power Eastern Interconnect	PJM West On-Peak monthly forward	8
NA Power ERCOT	ERCOT West Zone Forward	8
NA Power Western Interconnect	SP15 On-Peak Forward	8
EU Power Germany	German Power Peakload monthly forward	9
EU Power UK	UK Baseload Power Futures	9
Freight Wet	BE Worldscale Clean Tanker FFA Route TC2	10
Freight Dry	BE Dry Capesize FFA Route C3	10
Base Metals Aluminium	LME Aluminium Futures	11
Base Metals Copper	LME Copper Futures	11
Base Metals Lead	LME Lead Futures	11
Base Metals Nickel	LME Nickel Futures	11
Base Metals Tin	LME Tin Futures	11
Base Metals Zinc	LME Zinc Futures	11
Precious Metals Gold	COMEX Gold Futures	12
Precious Metals Silver	COMEX Silver Futures	12
Precious Metals Palladium	NYMEX Palladium Futures	12
Precious Metals Platinum	NYMEX Platinum Futures	12
Grains Corn	CBOT Corn Future	13
Grains Soybeans	CBOT Soybean Future	13
Grains Wheat	CBOT Chicago SRW Wheat Future	13
Softs Cocoa	ICE Cocoa Futures	14
Softs Coffee	ICE Coffee Futures	14
Softs Cotton	ICE Cotton Futures	14
Softs Sugar	ICE Sugar No 11 Futures	14
Livestock Live Cattle	CBOT Live Cattle Futures	15
Livestock Feeder Cattle	CBOT Feeder Cattle Futures	15
Livestock Lean Hogs	CBOT Lean Hog Futures	15

Appendix 2 : List of Base Corr Credit Index Families

The following table gives a non-exhaustive list of some credit index families, which can be used as the Qualifier for Risk_BaseCorr.

Note that other credit index families are permitted, and that absence from this list does not imply that the credit index family is disallowed. The list is provided to encourage standardisation of naming and ease reconciliation. Other credit index families can be added to this list to reflect market activity.

Qualifier	**Formal name**
CDX IG	Markit CDX North American Investment Grade
iTraxx Main	Markit iTraxx Europe
CDX HY	Markit CDX North American High Yield
iTraxx XO	Markit iTraxx Crossover

Appendix 3 : List of Equity Volatility Indexes

The following table gives a non-exhaustive list of some equity volatility indexes, whose risk should be placed into the Risk_EquityVol risk type.

Note that other equity volatility indexes are permitted, and that absence from this list does not imply that the equity volatility index should not be handled in the same way. Other equity volatility indexes can be added to this list to reflect market activity.

Short name	**Formal name**
VIX	CBOE Volatility Index on S&P 500
VFTSE	FTSE 100 Volatility Index
VSTOXX	Euro Stoxx 50 Volatility
VDAX-NEW	DAX Volatility Index
JNIV	Nikkei Volatility Index

Appendix 4 : Glossary of Currency definitions

There are a number of different currencies which are relevant to SIMM calculations, CSAs, and margins. This brief glossary gives an explanation of some of the currency definitions for ease of reference.

Currency type	Definition
Amount Currency	The currency in which the value "Amount" is given in the CRIF file. This can be any currency chosen by the file producer. Sometimes it is the same as the Calculation currency, but it need not be. It can be different for different rows in the CRIF file. Sometimes it is the "natural" currency of the risk, but it need not be. The choice of Amount Currency is purely a quote convention and it has no economic effect.
Calculation Currency	The currency for performing the SIMM calculation. The choice of Calculation Currency has an economic effect, because SIMM excludes FX delta in the Calculation Currency. The Calculation Currency is the fixed currency for SIMM calculation, and margin calculations are performed from that perspective, viewing all other currencies as subject to change. This choice is agreed bilaterally between each pair of counterparties, though can be different for each post/collect direction.
Base Currency	The currency for quoting SIMM amounts between counterparties to a CSA. This choice is agreed bilaterally between each pair of counterparties. It is purely a quote convention and has no economic effect. It may be the same as Calculation Currency, but need not be.
Reporting Currency	(Obsolete) Previously used as a synonym for "Calculation Currency". Now deprecated. Please use Calculation Currency instead.
"Trade Currency"	Has no official use, as it is not a well-defined concept. Trades can often be multi-currency, and have no single unique currency. Since the concept is not well-defined it should not be used for economic purposes, but can be used for non-economic purposes such as quoting or Amount Currency.
IM Collateral Currency	The currency of posted initial margin collateral. This is agreed bilaterally between each pair of counterparties, but has no direct effect on SIMM calculations.
VM Collateral Currency	The currency of posted variation margin collateral. Allowed currencies are agreed bilaterally between each pair of counterparties. This choice affects trade valuation, via discounting.

Appendix 5 : Change of Calculation Currency

In some circumstances it may be helpful to change the calculation currency of the IM calculation. The CRIF file makes no assumptions about, and is invariant to, the calculation currency of the IM calculation. In particular the *Amount* column may contain values in any *AmountCurrency*, which need not be the calculation currency or even the same for all rows.

The economic difference between two calculation currencies is that the IM calculation ignores FX delta sensitivities in the calculation currency (see paragraphs 18 and 26 of SIMM methodology). As long as the correct FX delta sensitivities are excluded from the calculation there are several practical ways of calculating IM in a different currency, including:

1. Perform the IM calculation in USD using the *AmountUSD* values and converting the result to the desired calculation currency using a spot FX rate

2. Converting the *AmountUSD* values to the desired calculation currency using a spot FX rate and performing the calculation entirely in the desired calculation currency

3. Converting the individual Amount values to the calculation currency based on spot FX rates between the *AmountCurrency* and calculation currency, ignoring the *AmountUSD* altogether, and perform the calculation entirely in the desired calculation currency

If the spot FX rates used for conversion are internally consistent (no arbitrage) then the calculation is insensitive to the implementation choice. The properly constructed CRIF file supports IM calculation in any calculation currency, or even different calculation currencies for different *PortfolioIDs* in the same file if the calculator has that information separately.