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| BEA\_IFRS9\_Customization\_Specification |
| prepared for MA Internal Use only |

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# Version Control

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# Introduction

## Document Objective

The aims of this document is to detail the customization of the IFRS9 System for BEA IFRS9 Project in order to implement the customization work of the overall design as documented in the Functional Specification Design (“FSD”) as per signed off version for the BEA IFRS9 System Project.

## Reference Documents

This document should be based on the Design documents:

* Technical Specification Document (“TSD”)
* Functional Specification Document(“FSD”)

With the supplement details attached with this document:

* [Intentionally Blank]

## Document Scope

The scope of this document will cover the requirements addressed in the FSD during the business review discussions workshops with BEA user (“BEA”). Any requirements or discussions that are not addressed as above will consider as out of scope for this project.

## Document Structure

The structure of the document as follow:

* <<To be update>>

## Abbreviations

|  |  |  |
| --- | --- | --- |
| **Category** | **Code / Abbreviation** | **Description** |
| **Organization** | BEA | Bank of East Asia |
|  | IFRS | International Finance Reporting standard |
|  |  |  |
|  | BCBS | Basel Committee on Banking Supervision |
|  |  |  |
|  |  |  |
| **Risk System** | RFo | Risk Foundation datamart |
|  | RD | Reporting Date |
|  | WS | Workspace |
|  | RCo | Risk Confidence |
| **Documents** | TSD | Technical Specification Document |
|  | FSD | Functional Specification Document |
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# CRM Allocation

## Business Requirement

## Data Requirement

**Pre-requisites**

Input of this customization:

* All transactions are loaded to LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS
* All CRM information are loaded to COLLATERAL / GUARANTEE / CONTRACT\_GUARANTEE

**Requirement**

In order to let RCO to calculate the effective LGD within the impairment loss calculation, which is used by the LGD formula for IFRS9 purpose, it is required to have the corresponding crm amount which to be allocated for each exposure, if there is any crm covered.

Based on, the mechanism of T\_CDR (the original result table from the RiskAuthority engine) would sever on this purpose. In which, every exposure would be tranched into more than one record, depends on the number of crm it has, and showing the assigned crm value accordingly.

This customization is expected to be executed every time before triggering the RCo impairment run.

During the allocation process, it is expected that both exposure amount and collateral amount are converted into the reporting currency, which is the same as reporting currency setup for each context.

Illustrative example attached below for reference:



## Proposed Design

The Overall objective is to get the final result table T\_CDR with the following dedicated fields required:

* GENERIC\_NUMBER\_1 to store the LGD for each CRM by tranche
* GENERIC\_FIELD\_1 to indicate whether it is COLLATERALIZED or NOT\_COLLATERALIZED
* GENERIC\_FIELD\_2 to indicate whether it is GUARANTEED or NOT\_GUARANTEED
* COLLATERAL\_ASSIGNED\_AMOUNT should be the expected result derived by this customization
* COLLATERAL\_ATTRIBUTE\_1 is expected to be brought from COLLATERAL.ATTRIBUTE\_1 by default.
* LGD is correctly reflecting the Collateral / guarantee / unsecured LGD respectively on each tranche
* PD\_NEW is also correctly reflecting the guarantor’s PD when applicable.
* EAD amount is correctly deducted after the CRM allocated.
* EAD\_ORIGINAL amount is correctly showing in T\_CDR

This is expected to be executed at Post-Transaction process.

## Procedure definition

PACK\_IFRS9\_CRMALLOC.Lauch\_I9PCA\_Process (‘O\_PM’)

# Final Counterparty Code.

## Business Requirement

## Data Requirement

**Pre-requisites**

Input of this customization:

* All transactions are loaded to LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS
* All CRM information are loaded to COLLATERAL
* All rating information for counterparty / guarantor / issuer are loaded to ISSUER\_CREDIT\_RATINGS
* All customer are loaded to ENTITY.
* This table - BEA\_ID\_DOC\_MAP to store the CUST\_NO for each ID\_DOUCMENT

**Requirement**

Due to the fact that BEA do not have a standard CIF number system which all the source system would be using. The CUST\_NO from PE3 will be finally used as the counterparty code within MADM. In order to have this standardized, there are two ways to retrieve this:

* CI\_METHOD = 1: ID\_DOCUMENT -> CUST\_NO
* CI\_METHOD = 2: CI\_ACC\_NO -> CUST\_NO

CI\_METHOD is already mapped to the NDIM20 in LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS tables.

ID\_DOCUMENT is already mapped to the ATTRIBUTE\_6 in LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS tables.

CI\_ACC\_NO is already mapped to the ATTRIBUTE\_2 in LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS tables.

For CI\_METHOD = 1:

This is assumed that the transaction is supposed to only have a single counterparty and also the ID\_DOCUMENT could be provided from Alnova (PE3) system.

In this case, the CUST\_NO should be retrieved from BEA\_ID\_DOC\_MAP.

For CI\_METHOD = 2:

This is assumed that the transaction is either under a joint account or the ID\_DOCUMENT could NOT be provided from Alnova (PE3) system. If this is the case, it is required to further check whether the account is signed with jointly liable or not, this could be identified by the DIM4 in LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS tables.

In the case of the account is under a joint account, and whereas DIM4 is marked as ‘T’, meaning that it is a jointly liable so that it is required to take the counterparty with a better PD rating to the instrument table; otherwise, just take the counterparty with a worse PD rating.

The comparison between each counterparty’s rating could be done by comparing the score of each counterparty’s rating. The higher the score, the better the rating. If the counterparty have more than one rating, take the worst rating for comparison.

The score is already mapped to the AMOUNT\_1 in ISSUER\_CREDIT\_RATINGS table.

Illustrative example attached below for reference:



## Proposed Design

The Overall objective is to get the following results updated in tables:

The final result will be updated to:

* The COUNTERPARTY\_CODE on the following table: LOANDEPO/FACILITY/REPO
* The CPTY\_CODE in table SECURITY\_POSITIONS
* The COUNTERPARTY in table COLLATERAL
* The ENTITY\_CODE in table ISSUER\_CREDIT\_RATINGS

This is expected to be executed at Post-Transaction process.

## Procedure definition

PACK\_BEA\_I9\_CUSTO. CPTYCODE\_PATCHING (‘O\_PM’)

# Stage allocation logic

## Business Requirement

## Data Requirement

**Pre-requisites**

* BEA\_STAGE\_ALLOCATION – This is the configuration table that BEA would upload to the system.
* All transactions are loaded to LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS
* ‘Current PD patching’ is executed.

**Requirement**

Please refer to FSD Section 13.2 for the details.

Illustrative example attached below for reference:



## Proposed Design

The Overall objective is to get the following results updated in tables:

* The DIM20 on the following table: LOANDEPO/FACILITY/REPO/ SECURITY\_POSITIONS

This is expected to be executed at Post-Transaction process.

## Procedure definition

PACK\_BEA\_IFRS9\_...

This procedure is to handle

# Patching of Guarantor LGD

## Business Requirement

<<To be update>>

## Data Requirement

**Pre-requisites**

* CRM allocation customization is executed, so that the T\_CDR is ready (with the following condition highlight in yellow below)
* LGD patching customization is executed, so that both unsecured as well as collateral / guarantee LGD are already in place in MADM
* PD patching customization is executed, so that the counterparty PD is already in place.

**Requirement**

Please refer to FSD Section 10.3 for details. As mentioned, in case of either of the following information is missing, it will be treat as no guarantee effect; while for the admin cost, if it is not provided by BEA, default value of 0 will be using for calculation.

* GUARANTEE.GUARANTEE\_PERCENTAGE
* GUARANTEE.PD
* GUARANTEE.LGD

Attached below have the following guarantee case to be covered:



1. For single guarantee case
2. For multiple guarantee case

There are two scenarios

1. joint and several - all guarantor are so that either guarantor is default, the other or remaining guarantor have the ability to cover all the remaining outstanding of the loan.
2. Not joint and several – each guarantor is only guarantee to a specific amount or a specific percentage of the loan. In case one of the guarantor is default, the other or remaining guarantor do NOT required to cover the default guarantor’s outstanding.

Illustrative example attached below for reference:



## Proposed Design

The Overall objective is to get the following results updated in tables:

* For the multiple guarantee case and which is JOINT and SEVERAL, before the final LGD result is updated to the LOANDEPO / FACILITY / REPO / SECURITY, it is required to de-link the crm in CONTRACT\_GUARANTEE by adding a suffix of ‘\_DEL’ at the end of the GUAR\_CONTRACT\_REF. This task need to be done BEFORE the CRM allocation.
* The final result, i.e. the guarantor LGD is expected to be updated to the instrument table NDIM12 on the following tables – LOANDEPO / FACILITY / REPO / SECURITY

This is expected to be the last step of Post-Transaction process.

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# LGD patching

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* BEA\_UNSECURED\_LGD is uploaded by BEA user
* BEA\_CRM\_RECOVERY\_RATE is uploaded by BEA user
* All transactions are loaded to LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS
* All CRM information are loaded to COLLATERAL / GUARANTEE / CONTRACT\_GUARANTEE

**Requirement**

This LGD patching is actually applied for both exposure as well as collateral. For details, please refer to FSD Section 12.2.

For non-retail exposure, it will base on the BEA\_UNSECURED\_LGD, to get the unsecured LGD by the basel asset class, company code, as well as contract type. While for the retail exposure, it is expected that there is another customization to fill up the RETAIL\_POOL before this LGD patching could be applied to the retail exposure. Once these retail pool are in place, the unsecured LGD could be retried by the basel asset class and together with the retail pool

Please note that the LGD provided in this BEA\_UNSECURED\_LGD is the actual LGD percentage, so that it is required to divided by 100 to the final result.

For collateral / guarantee, it will base on the BEA\_CRM\_RECOVERY\_RATE, to get the recovery rate by the location and the code of the crm. For any guarantee which have contract type start with 08-00-xx-xx, those will be mapped into GUARNATEE table, the rest of the collateral type will be mapped into COLLATERAEL table.

Please note that the recovery rate is provided for the crm, so that the LGD should be retrieved by 1 – recovery rate.

Illustrative example attached below for reference:



## Proposed Design

The Overall objective is to get the following results updated in tables:

* The final result for the exposure side will be updated to:
  + The LGD on the following table: LOANDEPO/FACILITY/REPO/ SECURITY
* The final result for the crm side will be updated to:
  + The LGD on the following table: COLLATERAL / GUARANTEE
  + The ATTRIBUTE\_1 to store the macro-economic index on the COLLATERAL table
  + The NDIM1 to store the Coefficient between the collateral and the marco-economic index on the COLLATERAL table.
  + The NDIM2 to store the recovery day required to sell off the collateral to recovery on the COLLATERAL table.

This is expected to be executed at Post-Transaction process.

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# Current PD patching

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* BEA\_RATING\_MASTER configuration table is uploaded by BEA user with all the internal and external rating information provided with the corresponding, rating order, score, and also Moody’s equivalent rating, if applicable, provided as well.
* These information will then be loaded to RATING table.
* BEA\_OVERRIDE\_PD table is also uploaded by BEA user.
* Counterparty / Issuer / Guarantor’s INTERNAL and / or EXTERNAL rating are all loaded to ISSUER\_CREDIT\_RATINGS tables.

**Requirement**

There are different scenarios to be handled, please refer to FSD version 1.0 Section 12.1.1 for the final requirement. Basically, it involve the following procedures on this PD patching:

1. Overriding Rating with the Long Run average PD
2. Get the worst rating
3. Conversion to Moody’s equivalent rating
4. Backfilling PD

Please note that the last one (v) Backfilling PD should be executed after (i) to (iii) are all done.

Illustrative example attached below for reference:



## Proposed Design

The Overall objective is to get the following results updated in tables:

* + The DIM15 on the following table: LOANDEPO/FACILITY/REPO/SECURITY\_POSITIONS with concat both value and with a delimiter “|” adding between, to reflect the Current BEA Final rating and also the rating order.
  + The Final Rating as well as the rating order will be inserted into ISSUER\_CREDIT\_RATINGS for non-retail portfolio.

This is expected to be executed at Post-Transaction process.

## Procedure definition

PACK\_BEA\_I9\_CUSTO.init\_patching\_PD(‘Y’)

PACK\_BEA\_I9\_CUSTO.patching\_PD(‘O\_PM’)

This procedure is to

# CCF patching

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* BEA\_OFFBAL\_CCF is a configuration table provided by BEA users.
* All undrawn commitment / facility line are loaded to FACILITY table

**Requirement**

Please refer to FSD version 1.0 Section 18.2 footnote 28. In case the Credit Conversion Factor (CCF) is not provided by the source system for those undrawn commitment or facility line. The CCF value (currently followed the basel standard) will be used based on the OFF\_BAL\_ITEM\_CODE provided from each source system.

Illustrative example attached below for reference:

**

## Proposed Design

This is better to have a lookup function to be created under PACK\_BEA\_ETL\_POST so that this logic to be handled within the Transformation logic.

This function is expected to have one input parameter, i.e. BEA\_SINGLE\_VIEW.OFF\_BS\_ITEM\_CODE.

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# Maturity Date patching

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* All transactions are loaded to LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS

**Requirement**

Please refer to FSD Section 9.3.3 for detail.

Illustrative example attached below for reference:

****

## Proposed Design

This is expected to be executed at Post-Transaction process.

The Overall objective is to get the following results updated in tables:

* MATURITY\_DATE in the following tables LOANDEPO / FACILITY / REPO / SECURITY\_POSITIONS

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# Retail Pool Patching

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* All transactions are loaded to LOANDEPO / FACILITY

**Requirement**



SYS\_NAME: could be replaced by the SOURCE\_ID in BEA\_SINGLE\_VIEW

ACC\_NO: referring to the CI\_ACC\_NO in BEA\_SINGLE\_VIEW

Retail PD: referring to the new column – CURRENT\_PD\_GRADE added in the BEA\_SINGLE\_VIEW

Asset Class Code: referring to the BASEL\_ASSET\_CLASS in the BEA\_SINGLE\_VIEW

Collateral Code: referring to the CONTRACT\_TYPE in the new staging table – STG\_BEA\_COLLATERAL. Also, it is required to linked up the exposure and collateral by the STG\_BEA\_CONT\_GUAR table.

Illustrative example attached below for reference:



## Proposed Design

It is expected that the following 7 RETAIL\_POOL and DIM13 code will be finally existed in LOADEPO / FACILITY whenever the condition are met.

* HK\_CREDIT\_CARD
* HK\_RESIDENTIAL\_MORTGAGE
* HK\_REVOLVING\_LINE
* HK\_OTHER\_RETAIL
* HK\_NON\_RES\_SECURED\_LOANS
* HK\_UNSECURED\_LOANS
* CN\_MORTGAGE

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# GL Posting Patching

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* The weighted ECL customization is executed before this customization.
* BEA\_GL\_POST\_MAPPING is provided by BEA user.

**Requirement**

After each transaction is weighted by the probability as setup, the impairment loss for each transaction is expected to be posting back to BEA GL system. However, this customization is only limited to split one transaction into 2 or 4 records based on the COA provided in the BEA\_GL\_POST\_MAPPING.

For details, please refer to FSD Section 17.

## Proposed Design

The final result will then be loaded to a custom table - BEA\_GL\_POSTING for BEA further usage.

Illustrative example attached below for reference:



## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# Weighted ECL

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* The impairment loss for 5 scenarios are generated by the RCo engine.
* The probability of each scenario is setup correctly

**Requirement**

Due to the requirement that the impairment loss is required to be calculated with the consideration of different marco-economic factor. For each of the transaction, it will be calculated with 5 different set of marco-economic scenarios and so to have 5 different impairment loss result for the same transaction.

On top, each scenario would have a probability that it would happen, which have been setup within the RCo, for details, please refer to FSD Section 14.

Based on these, each of the transaction would be weighted by the probability for each scenario and so to have only one impairment loss result for each transaction at last.

Illustrative example attached below for reference:



## Proposed Design

Before applying the weighted probability for each transaction, the full set of 5 scenarios are backup to another table – BEA\_T\_ALM\_ANALYTICS

After this backup, the original result table from RCo, i.e. T\_ALM\_ANALYTICS, will then only keep the weighted impairment loss for each transaction

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# Original Rating and PD Handling

## Business Requirement

As part of the IFRS9 changes, one key component of the Stage Allocation Logic is to require the identify the deteriorate state of Credit Rating of an Exposure from the Origination date to the reporting date. As such it would require the system to acquire the credit rating and the corresponding PD at the time of the Exposure origination and compared it with present day value.

Although BEA have Moody’s solution RA for their PD rating system, there is no historical data of rating kept and available from the source system. BEA client perceived MA solution (IFRS9) is a good place to accumulate such information. BEA will provide a one- time historical data and expect the IFRS9 to store and accumulate with new data to maintain the information for ongoing production purposes.

## Data Requirement

**Scope**

For this customization a new custom table “BEA\_ICR\_HIST” will be create to store and maintain the original PD value. This table is expected to store at counterparty, agency code and rating date level.

The other data field that is the output of this customization will be the DIM14 of the instrument tables (Namely: FACILITY, LOANDEPO, REPO, SECURITY\_POSITION)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BEA\_ICR\_HIST** | | | | | |
| **Table type** | Admin | | | | |
| **Description** | This table will be a non-partition table that accumulate and stored the Credit Rating information | | | | |
| **Column** | **Type** | **Description** | **Primary Key** | **Nullable** | **Example** |
| ENTITY\_CODE | VARCHAR2(50) | Counterparty code | Y | N | ABC\_1234 |
| AGENCY\_CODE | VARCHAR2(3) | Unique code of Rating Agency. As for BEA, the recognize value are:   1. MD 2. SP 3. FI 4. CN\_DG 5. CN\_SB 6. CN\_LH 7. CN\_CCXI 8. CN\_GO 9. INT 10. IFRS9\_FINAL | Y | N | MD  SP  FI  INT |
| RATING\_DATE | DATE | Rating Date. This field cannot be null. For initialization, the rating date will be default to 1901/1/1 or be provided. After initialization, any new records will be inserted date as according to import information or if null the reporting date of the context where the insertion procedure if being executed. | N | Y | 1901/1/1  2017/2/24 |
| SHORT\_TERM\_RATING | VARCHAR2(12) | Short term rating of the entity. Follow the Standard External code. | N | Y | (Not Applicable to BEA at this stage) |
| LONG\_TERM\_RATING | VARCHAR2(12) | Long term rating of the entity. Follow the Standard External code as well as BEA internal code. | N | Y | BBB- |
| LONG\_TERM\_RATING\_LOCAL\_CCY | VARCHAR2(12) | Long Term Rating of the entity for local currency exposures (exposures denominated in the incorporation currency of the entity). Generally applicable to Sovereign Rating | N | Y | (Not Applicable to BEA at this stage) |
| INPUT\_DATE | DATE | Input Date. This field cannot be null. For initialization, the input date will be default to 1990/1/1 or be provided. After initialization, any new records will be inserted date as according to the reporting date of the context where the insertion procedure if being executed. | Y | N | 1901/1/1  2017/2/24 |
| LOAD\_DATE | DATE | Technical field to store the system date where the Record is inserted. This is to facilitate Audit and tracking purposes. | N | Y | 2017/2/24 |
| IMPORT\_SOURCE | VARCHAR2(20) | Import source of the new data | N | Y | TC3 |
| MAPPED\_RATING | VARCHARS(12) | This is to store the Moody’s equivalent rating. To copy from v5.0.2 of ISSUER\_CREDIT\_RATINGS  This is applicable to Agency\_code “IFRS9\_FINAL’ | N | Y | B3 |
| ATTRIBUTE\_2 | VARCHARS(100) | To follow the attribute\_2 of ISSUER\_CREDIT\_RATINGS. This is to store the Original rating order. | N | Y | INT\_17 |
| BASEL\_ASSET\_CLASS | VARCHARS(100) | Type of counterparty class. Expected to be same value as of DIM6 of instrument table. This is to facilitate the Final PD determination  Expected value of 01-20 | N | Y | 07 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BEA\_DEAL\_ORI\_RATING** | | | | | |
| **Table type** | Data | | | | |
| **Description** | For performance reason, this table is created as an intermediary that stored know original Final rating and order | | | | |
| **Column** | **Type** | **Description** | **Primary Key** | **Nullable** | **Example** |
| CONTRACT\_REFERENCE | VARCHAR2(101) | Unique code which identifies the contract | Y | N | ABC\_1234 |
| TABLE\_NAME | VARCHAR2(30) | The instrument table name where the deal store | Y | N | REPO  LOANDEPO  FACILITY  SECURITY\_POSITION |
| COUNTERPARTY\_CODE | VARCHAR2(50) | Counterparty\_code of the deal. For security Posiiton, this will be the issuer.  TODO. A dummy code to assigned if this information is missing | N | Y | CPTY\_ABC\_1234 |
| VALUE\_DATE | DATE | The Exposure original date. If this data is missing from the original data, it will be the first reporting date where the record is found. | N | N | 2001/1/1 |
| ORI\_BEA\_FINAL\_RATING | VARCHAR2(12) | Using BEA Final rating logic to determine the original | N | Y | B1 |
| ORI\_RATING\_ORDER | VARCHAR2(12) | The rating order of the final rating | N | Y | MDY\_14 |
| RATING\_DATE | DATE | Rating Date. This field cannot be null. For initialization, the rating date will be default to 1901/1/1 or be provided. After initialization, any new records will be inserted date as according to import information or if null the reporting date of the context where the insertion procedure if being executed. | N | Y | 1901/1/1 |
| INPUT\_DATE | DATE | Input Date. This field cannot be null. For initialization, the input date will be default to 1990/1/1 or be provided. After initialization, any new records will be inserted date as according to the reporting date of the context where the insertion procedure if being executed. | N | Y |  |
| LOAD\_DATE | DATE | Technical field to store the system date where the Record is inserted. This is to facilitate Audit and tracking purposes. | N | Y | 2017/2/24 |
| LAST\_SEEM\_DATE | DATE | Technical field. On the reporting date where the record is on this table but not on instrument table , this field will be updated. This field is to facilitate housekeeping of the table. When this is NULL, it mean the record is currently available on instrument table | N | Y | 2017/2/24 |
| NULL\_VALUE\_DATE\_IND | CHAR | Null Value date indicator. To indicate if the Deal has null value date. This is to handle cases where the input data has a change of Value date.  Expected value T or F | N | Y | T |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LOANDEPO/ FACILITY/ REPO/ SECURITY\_POSITIONS** | | | | | |
| **Table type** | Data | | | | |
| **Description** | This table contains the 1 columns for Original rating on 4 instrument tables (i.e FACILITY, LOANDEPO, REPO, SECURITY\_POSITIONS) | | | | |
| **Column** | **Type** | **Description** | **Primary Key** | **Nullable** | **Example** |
| DIM14 | VARCHAR2(100) | (ORIGINAL\_BEA\_FINAL\_RATING | ORIGINAL\_RATING\_ORDER)  Concatenation of 2 fields the final original ratring and the original rating order | N | Y | B1|MDY\_14 |

## Proposed Design

* + 1. **Overview of the design**

In this customization , 2 major steps are involved, they are

1. Maintaining and update BEA\_ICR\_HIST on daily basis
2. Maintaining (including Housekeeping) and update BEA\_DEAL\_ORI\_RATING and update DIM14 of the respective deal in the respective instrument table

For (i) 3 distinct function is required to maintain BEA\_ICR\_HIST, they are

* Initial load of BEA\_ICR\_HIST
* Insertion of new record
* Revert and rerun

For (ii) Maintaining BEA\_DEAL\_ORI\_RATING required below function ,they are

* Copy of BEA\_DEAL\_ORI\_RATING from last available REPORTING\_DATE
* Update DIM14 to existing recording from previous days’s BEA\_DEAL\_ORI\_RATING
* Insert new deal and corresponding final rating and order onto BEA\_DEAL\_ORI\_RATING
* Update DIM14 of instrument table for new create record of BEA\_DEAL\_ORI\_RATING
* Revert bad interface file and rerun scenario.
* Housekeeping of BEA\_DEAL\_ORI\_RATING
  + 1. **BEA\_ICR\_HIST**

All the below procedure is expected to be called after /the ETL to MADM step is called.

**Initialisation**

BEA will provide a historical table to provide the initial load of the historical rating (5 years??). The staging table name to be determined. There should be a procedure to copy from this initial load into BEA\_ICR\_HIST.

The copy will

1. copy record that have entity\_code, agency\_code and long\_term\_rating, (No copy if either of data is missing)
2. If the record do not have rating\_date, the rating\_date will be default to 2012/1/1 [TBC by BEA]
3. In the initial Load, the input date will be set as 1990/1/1 as an indicator of initial Load.
4. The Load\_date will be the system time of the Load.

[TBC] The initial load is expected

1. to be in the form of ISSUER\_CREDIT\_RATINGSBEA across 5 year of partition data.
2. After loading BEA\_ICR\_RATING is expected to be in a historical Chain manner as shown below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ENTITY  \_CODE | AGENCY  \_CODE | LONG\_  TERM\_RATING | RATING  \_DATE | INPUT\_DATE | MAPPED  \_RATING | ATTRIBUTE\_2 | BASEL\_  ASSET\_CLASS |
| CPTY\_1 | SP | AA- | 2012.01.01 | 1990.01.01 |  |  | 07 |
| CPTY\_2 | SP | BB- | 2013.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | SP | AA | 2015.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | FI | B- | 2013.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | INT | 17 | 2013.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | INT | 10 | 2014.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_3 | SP | A | 2017.04.01 | 1990.01.01 |  |  | 10 |
| CPTY\_4 | INT | 8 | 2016.01.01 | 1990.01.01 |  |  | 16 |

1. After the initial load, starting from the initial date (TBC: 2012.01.01) , to do an insertion of Final rating record (To follow the Current PD handling, Agency\_code =’ IFRS9\_FINAL’) for each counterparty level at every rating change. The inserted IFRS9\_FINAL record should also reflect the historical chain manner as per other rating.

.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ENTITY  \_CODE | AGENCY  \_CODE | LONG\_  TERM\_RATING | RATING  \_DATE | INPUT\_DATE | MAPPED  \_RATING | ATTRIBUTE\_2 | BASEL\_  ASSET\_CLASS |
| CPTY\_1 | SP | AA- | 2012.01.01 | 1990.01.01 |  |  | 07 |
| CPTY\_4 | IFRS9\_FINAL |  | 2012.01.01 | 1990.01.01 | Aa3 | MDY\_4 | 07 |
| CPTY\_2 | SP | BB- | 2013.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | SP | AA | 2015.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | FI | B- | 2013.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | INT | 17 | 2013.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | INT | 10 | 2014.01.01 | 1990.01.01 |  |  | 10 |
| CPTY\_2 | IFRS9\_FINAL |  | 2012.01.01 | 1990.01.01 | Ba2 | Mdy\_12 | 10 |
| CPTY\_2 | IFRS9\_FINAL |  | 2013.01.01 | 1990.01.01 | Caa1 | INT\_17 | 10 |
| CPTY\_2 | IFRS9\_FINAL |  | 2014.01.01 | 1990.01.01 | Ba2 | INT\_10 | 10 |
| CPTY\_3 | INT | 13 | 2017.04.01 | 1990.01.01 |  |  | 11 |
| CPTY\_3 | IFRS9\_FINAL |  | 2012.01.01 | 1990.01.01 | Ba1 | MDY\_11 | 11 |
| CPTY\_3 | IFRS9\_FINAL |  | 2017.04.01 | 1990.01.01 | B2 | INT\_11 | 11 |
| CPTY\_4 | INT | 8 | 2016.01.01 | 1990.01.01 |  |  | 16 |
| CPTY\_4 | IFRS9\_FINAL |  | 2012.01.01 | 1990.01.01 | Ba1 | INT\_9 | 16 |
| CPTY\_4 | IFRS9\_FINAL |  | 2016.01.01 | 1990.01.01 | Baa3 | INT\_8 | 16 |

[TBC with BEA] Can we assume not break in Rating. For example for CPTY\_2 the last internal rating is 2014 and we can assume it is always rated as internal rating 10 from 2014 to 2017? Will there be a scenario that it become unrated for some in-between period like in 2015 , it was unrated but rated 10 again in 2016?

**Insert of new record in Normal Run.**

Assumption:

1. That there will be no parallel insertion happen across 2 workspace.
2. New record will be come from table ISSUER\_CREDIT\_RATINGS twice a day, one time in the morning and one time in the afternoon.
3. The initial load has already done, there will be some record on BEA\_ICR\_HIST.
4. Record on BEA\_ICT\_HIST is to be kept forever, no housekeeping will be performed.
5. Any null rating date from ISSUER\_CREDIT\_RATINGS will be treat as the reporting date of the context.

When the procedure is call, it will perform the following steps:

1. If ISSUER\_CREDIT\_RATINGS contain a new distinct ENTITY\_CODE, AGENCY\_CODE record that not exists on BEA\_ICR\_HIST, insert that record.
2. If ISSUER\_CREDIT\_RATINGS contain a match record of ENTITY\_CODE,AGENCT\_CODE and LONG\_TERM\_RATING is different from the latest one, and the rating\_date is later than BEA\_ICR\_HIST.RATING\_DATE, that record will be inserted.

In either case, the rating\_date will be the reporting\_date of the context where the procedure will be called.

Example

RD: 2017.04.26

BEA\_ICR\_HIST (Before)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE |
| CPTY\_1 | FI | BBB+ | 2012.01.01 | 1990.01.01 |
| CPTY\_2 | SP | AAA | 2012.01.01 | 1990.01.01 |
| CPTY\_2 | SP | BBB+ | 2013.01.01 | 1990.01.01 |
| CPTY\_2 | SP | AA | 2015.01.01 | 1990.01.01 |
| CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 |
| CPTY\_3 | SP | A | 2017.04.01 | 2017.04.01 |
| CPTY\_4 | SP | BBB- | 2016.01.01 | 1990.01.01 |

The new daily record of ISSUER\_CREDIT\_RATINGS are

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S/N | ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE |
| 1 | CPTY\_1 | SP | BBB |  |
| 2 | CPTY\_2 | SP | BBB+ |  |
| 3 | CPTY\_2 | FI | A | 2017.03.22 |
| 4 | CPTY\_3 | SP | BBB- | 2016.03.20 |
| 5 | CPTY\_4 | SP | BBB- | 2017.03.20 |

Based on the input, item 1 ,2 , 3 will be insert, 4 will be ignore as the rating date is older than the one on BEA\_ICR\_HIST and 5 is ignore as it has the same rating as the latest one.

Item 2 will be inserted because the long\_term\_rating ‘BBB+’ is different from the latest rating ‘AA’ with agency\_code=’SP’.

BEA\_ICR\_HIST (After)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE |
| CPTY\_1 | FI | BBB+ | 2016.01.01 | 1990.01.01 |
| CPTY\_1 | SP | BBB | 2017.04.26 | 2017.04.26 |
| CPTY\_2 | SP | AAA | 2011.01.01 | 1990.01.01 |
| CPTY\_2 | SP | BBB+ | 2012.01.01 | 1990.01.01 |
| CPTY\_2 | SP | AA | 2015.01.01 | 1990.01.01 |
| CPTY\_2 | SP | BBB+ | **2017.04.26** | 2017.04.26 |
| CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 |
| CPTY\_2 | FI | A | 2017.03.22 | 2017.04.26 |
| CPTY\_3 | SP | A | 2017.04.01 | 2017.04.01 |
| CPTY\_4 | SP | BBB- | 2016.01.01 | 1990.01.01 |

**Revert and Rerun**

In event there is a bad interface load before and it was found later, 1 or 2 procedure or revert and rerun of the insert will be the required. Only in such situation a deletion of BEA\_ICR\_HIST will occurred.

For example : if the input file from PE3 of 2017.04.20 is found to be wrong, All record with INPUT\_DATE will be deleted and additional step to compare those that deleted whether the previous and next rating is identical and if so, deleted the next record.

**BEA\_ICR\_HIST** (Before)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE | IMPORT\_SOURCE |
| CPTY\_2 | SP | AAA | 2011.01.01 | 2017.03.01 | PE3 |
| CPTY\_2 | SP | BBB+ | 2012.01.01 | 2017.04.01 | PE3 |
| CPTY\_2 | SP | AA | 2015.01.01 | 2017.04.20 | PE3 |
| CPTY\_2 | SP | BBB+ | 2017.04.26 | 2017.04.27 | PE3 |
| CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 | PE3 |
| CPTY\_2 | FI | A | 2017.03.22 | 2017.04.20 | PE3 |
| CPTY\_3 | SP | A | 2017.04.01 | 2017.04.01 | PE3 |
| CPTY\_3 | SP | BBB- | 2016.01.01 | 2017.04.20 | PE3 |
| CPTY\_3 | SP | BBB | 2017.04.25 | 2017.04.27 | PE3 |

Step 1: Delete the input record. Those record with input\_date = 2017.04.20 will be deleted.

**BEA\_ICR\_HIST**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Row | ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE | IMPORT\_SOURCE |
| 1 | CPTY\_2 | SP | AAA | 2011.01.01 | 2017.03.01 | PE3 |
| 2 | CPTY\_2 | SP | BBB+ | 2012.01.01 | 2017.04.01 | PE3 |
| 3 | ~~CPTY\_2~~ | ~~SP~~ | ~~AA~~ | ~~2015.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 4 | CPTY\_2 | SP | BBB+ | 2017.04.26 | 2017.04.27 | PE3 |
| 5 | CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 | PE3 |
| 6 | ~~CPTY\_2~~ | ~~FI~~ | ~~A~~ | ~~2017.03.22~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 7 | CPTY\_3 | SP | A | 2017.04.01 | 2017.04.01 | PE3 |
| 8 | ~~CPTY\_3~~ | ~~SP~~ | ~~BBB-~~ | ~~2016.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 9 | CPTY\_3 | SP | BBB | 2017.04.25 | 2017.04.27 | PE3 |

Step 2. After first deletion, it is found that row 2 and 4 is identical and row 4 , being the later rating date would need to be removed. As show below.

**BEA\_ICR\_HIST**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Row | ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE | IMPORT\_SOURCE |
| 1 | CPTY\_2 | SP | AAA | 2011.01.01 | 2017.03.01 | PE3 |
| 2 | CPTY\_2 | SP | BBB+ | 2012.01.01 | 2017.04.01 | PE3 |
| 3 | ~~CPTY\_2~~ | ~~SP~~ | ~~AA~~ | ~~2015.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 4 | ~~CPTY\_2~~ | ~~SP~~ | ~~BBB+~~ | ~~2017.04.26~~ | ~~2017.04.27~~ | ~~PE3~~ |
| 5 | CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 | PE3 |
| 6 | ~~CPTY\_2~~ | ~~FI~~ | ~~A~~ | ~~2017.03.22~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 7 | CPTY\_3 | SP | A | 2017.04.01 | 2017.04.01 | PE3 |
| 8 | ~~CPTY\_3~~ | ~~SP~~ | ~~BBB-~~ | ~~2016.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 9 | CPTY\_3 | SP | BBB | 2017.04.25 | 2017.04.27 | PE3 |

In the rerun scenario, new set of ISSUER\_CREDIT\_RATINGS will be compare to BEA\_ICR\_HIST where INPUT\_DATE is before 2017.04.20 and proceed the insert as Normal run logic.

**ISSUER\_CREDIT\_RATINGS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | IMPORT\_SOURCE |
| CPTY\_1 | SP | BBB | 2017.03.24 | PE3 |
| CPTY\_2 | SP | BBB+ |  | PE3 |
| CPTY\_3 | SP | BBB | 2017.03.20 | PE3 |

Step 3. Insert as per Normal run with INPUT\_DATE <2017.04.20

**BEA\_ICR\_HIST**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Row | ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE | IMPORT\_SOURCE |
| 0 | CPTY\_1 | SP | BBB | 2017.03.24 | 2017.04.20 | PE3 |
| 1 | CPTY\_2 | SP | AAA | 2011.01.01 | 2017.03.01 | PE3 |
| 2 | CPTY\_2 | SP | BBB+ | 2012.01.01 | 2017.04.01 | PE3 |
| 3 | ~~CPTY\_2~~ | ~~SP~~ | ~~AA~~ | ~~2015.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 4 | ~~CPTY\_2~~ | ~~SP~~ | ~~BBB+~~ | ~~2017.04.26~~ | ~~2017.04.27~~ | ~~PE3~~ |
| 5 | CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 | PE3 |
| 6 | ~~CPTY\_2~~ | ~~FI~~ | ~~A~~ | ~~2017.03.22~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 7 | CPTY\_3 | SP | A | 2015.04.01 | 2017.04.01 | PE3 |
| 8 | ~~CPTY\_3~~ | ~~SP~~ | ~~BBB-~~ | ~~2016.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 8.5 | CPTY\_3 | SP | BBB | 2017.03.20 | 2017.04.20 | PE3 |
| 9 | CPTY\_3 | SP | BBB | 2017.04.25 | 2017.04.27 | PE3 |

Step 4. After insert, check the insert row and see if there is any later –dated rating that have identical rating and to remove that record. In the example, row 9 is deleted.

**BEA\_ICR\_HIST**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Row | ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | RATING\_DATE | INPUT\_DATE | IMPORT\_SOURCE |
| 0 | CPTY\_1 | SP | BBB | 2017.03.24 | 2017.04.20 | PE3 |
| 1 | CPTY\_2 | SP | AAA | 2011.01.01 | 2017.03.01 | PE3 |
| 2 | CPTY\_2 | SP | BBB+ | 2012.01.01 | 2017.04.01 | PE3 |
| 3 | ~~CPTY\_2~~ | ~~SP~~ | ~~AA~~ | ~~2015.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 4 | ~~CPTY\_2~~ | ~~SP~~ | ~~BBB+~~ | ~~2017.04.26~~ | ~~2017.04.27~~ | ~~PE3~~ |
| 5 | CPTY\_2 | FI | BBB+ | 2016.01.01 | 1990.01.01 | PE3 |
| 6 | ~~CPTY\_2~~ | ~~FI~~ | ~~A~~ | ~~2017.03.22~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 7 | CPTY\_3 | SP | A | 2017.04.01 | 2017.04.01 | PE3 |
| 8 | ~~CPTY\_3~~ | ~~SP~~ | ~~BBB-~~ | ~~2016.01.01~~ | ~~2017.04.20~~ | ~~PE3~~ |
| 8.5 | CPTY\_3 | SP | BBB | 2017.03.20 | 2017.04.20 | PE3 |
| 9 | CPTY\_3 | SP | BBB | 2017.04.25 | 2017.04.27 | PE3 |

As this BEA\_ICR\_HIST is a continuous running table, if a rerun of file occurred on 2017.04,20, all subsequent file should be rerun to the latest reporting date available.

* + 1. **BEA\_DEAL\_ORI\_RATING**

As the Original Rating is a static value that do not change once the deal started, it would be easier to copy the result from previous report date and only to compute the final original rating and the rating order for the new deal record.

The logic of determine the original final rating is the same as the CURRENT PD PATCHING customization as in Section 7.

**COPY from previous reporting Date of same Position Number.**

Upon calling the copy procedure, the current context will filled up BEA\_DEAL\_ORI\_RATING table from the context of last previous reporting\_date of the same POSITION Number. Return a log message of whether such context can be found and if and any copy has happened.

**New deal on current context that not in BEA\_DEAL\_ORI\_RATING.**

If there is new deal record on the instrument table but not on BEA\_DEAL\_ORI\_RATING. A new record will be inserted onto BEA\_DEAL\_ORI\_RATING.

If some of the below Data is missing, the exception handling will be

1. Value\_date to default to reporting\_date of the context or Maturity\_date -1 whichever is earlier.
2. Counterparty\_code. If the data is missing, to confirm with user what would be the exception handling. Should a dummy code to be used?
3. Rating\_date, if there is no specific date, the reporting\_date of the context will be used.
4. [TODO]: What would happen that a Value\_Date has been changed?

For ORI\_BEA\_FINAL\_RATING and ORI\_RATING\_ORDER, ISSUER\_CREDIT\_RATINGS, we need to look MAPPED\_RATING and ATTRIBUTE\_2 of BEA\_ICR\_HIST with corresponding ENTITY\_CODE and the Rating\_date that is prior to the Value\_date of the Deal.

For example. 3 deal below do not have the final rating and order.

**BEA\_DEAL\_ORI\_RATING** (Original)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CONTRACT\_REFERENCE | TABLE\_NAME | COUNTERPARTY\_CODE | VALUE\_DATE | ORI\_BEA\_FINAL\_RATING | ORI\_RATING\_ORDER | RATING\_DATE |
| DEAL\_1 | REPO | CPTY\_2 | 2017.01.01 |  |  |  |
| DEAL\_2 | LOANDEPO | CPTY\_2 | 2015.06.06 |  |  |  |
| DEAL\_3 | FACILITY | CPTY\_2 | 2014.02.01 |  |  |  |

Step 1: To determine IFRS9\_FINAL record whose Rating\_date that is just prior to the Value\_date of the Deal.

**BEA\_ICR\_HIST**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Row | ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | MAPPED\_RATING | ATTRIBUTE\_2 | RATING\_DATE | INPUT\_DATE |
| 1 | CPTY\_2 | SP | AAA |  |  | 2012.01.01 | 2017.03.01 |
| 2 | CPTY\_2 | SP | BBB+ |  |  | 2013.01.01 | 2017.04.01 |
| 3 | CPTY\_2 | SP | AA |  |  | 2015.01.01 | 2017.04.20 |
| 4 | CPTY\_2 | SP | BBB+ |  |  | 2017.04.26 | 2017.04.27 |
| 5 | CPTY\_2 | FI | BBB+ |  |  | 2016.01.01 | 1990.01.01 |
| 6 | CPTY\_2 | FI | A |  |  | 2017.03.22 | 2017.04.20 |
| 7 | CPTY\_2 | IFRS9\_FINAL |  | Caa1 | INT\_17 | 2015.01.01 | 2015.01.01 |
| 8 | CPTY\_2 | IFRS9\_FINAL |  | B3 | INT\_16 | 2016.01.01 | 2016.01.01 |

For Deal 1, it would be row 8 and for Deal 2 it will be row 7. There is no IFRS9\_FINAL record whose Rating\_date prior to 2014.02.01 for Deal 3. (This is unlikely to happen as there should be historial information up to 2012.01.01)

**BEA\_DEAL\_ORI\_RATING**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CONTRACT\_REFERENCE | TABLE\_NAME | COUNTERPARTY\_CODE | VALUE\_DATE | ORI\_BEA\_FINAL\_RATING | ORI\_RATING\_ORDER | RATING\_DATE | INPUT\_DATE |
| DEAL\_1 | REPO | CPTY\_2 | 2017.01.01 | B3 | INT\_16 | 2016.01.01 | 2017.04.26 |
| DEAL\_2 | LOANDEPO | CPTY\_2 | 2015.06.06 | Caa1 | INT\_17 | 2015.01.01 | 2017.04.26 |
| DEAL\_3 | FACILITY | CPTY\_2 | 2014.02.01 |  |  |  |  |

[TBC] In event there is a missing IFRS9\_FINAL record prior to the Value. We could

1. If there is earlier rating info , we could use the Current PD handling to determine the earlier IFRS9\_FINAL record.
2. If there is no available rating, a default value will follow the no rating handling as describe in Current PD handling

**BEA\_ICR\_HIST**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ENTITY\_CODE | AGENCY\_CODE | LONG\_TERM\_RATING | MAPPED\_Rating | ATTRIBUTE\_2 | RATING\_DATE | INPUT\_DATE |
| CPTY\_2 | SP | AAA |  |  | 2012.01.01 | 2017.03.01 |
| CPTY\_2 | SP | BBB+ |  |  | 2013.01.01 | 2017.04.01 |
| CPTY\_2 | SP | AA |  |  | 2015.01.01 | 2017.04.20 |
| CPTY\_2 | SP | BBB+ |  |  | 2017.04.26 | 2017.04.27 |
| CPTY\_2 | FI | BBB+ |  |  | 2016.01.01 | 1990.01.01 |
| CPTY\_2 | FI | A |  |  | 2017.03.22 | 2017.04.20 |
| CPTY\_2 | IFRS9\_FINAL |  | Ba2 | MDY\_12 | 2012.01.01 | 2017.04.26 |
| CPTY\_2 | IFRS9\_FINAL |  | Caa1 | INT\_17 | 2015.01.01 | 2015.01.01 |
| CPTY\_2 | IFRS9\_FINAL |  | B3 | INT\_16 | 2016.01.01 | 2016.01.01 |

After the IFRS\_FINAL record is created, DEAL 3 will be updated accordingly.

**BEA\_DEAL\_ORI\_RATING**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CONTRACT\_REFERENCE | TABLE\_NAME | COUNTERPARTY\_CODE | VALUE\_DATE | ORI\_BEA\_FINAL\_RATING | ORI\_RATING\_ORDER | RATING\_DATE | INPUT\_DATE |
| DEAL\_1 | REPO | CPTY\_2 | 2017.01.01 | B3 | INT\_16 | 2016.01.01 | 2017.04.26 |
| DEAL\_2 | LOANDEPO | CPTY\_2 | 2015.06.06 | Caa1 | INT\_17 | 2015.01.01 | 2017.04.26 |
| DEAL\_3 | FACILITY | CPTY\_2 | 2014.02.01 | Ba2 | MDY\_12 | 2012.01.01 | 2017.04.26 |

**Updating of Dim14 of instrument table on current context**

After the copy of the BEA\_DEAL\_ORI\_RATING is done, using CONTRACT\_REFERENCE as a joining condition, we could update DIM14 of the instrument tables (FACILITY, LOANDEPO, REPO, SECURITY\_POSITIONS) using BEA\_DEAL\_ORI\_RATING. ORI\_BEA\_FINAL\_RATING || ‘|’ || BEA\_DEAL\_ORI\_RATING. ORI\_RATING\_ORDER

**BEA\_DEAL\_ORI\_RATING**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CONTRACT\_REFERENCE | TABLE\_NAME | COUNTERPARTY\_CODE | VALUE\_DATE | ORI\_BEA\_FINAL\_RATING | ORI\_RATING\_ORDER | RATING\_DATE | INPUT\_DATE |
| DEAL\_1 | REPO | CPTY\_2 | 2017.01.01 | B3 | INT\_16 | 2016.01.01 | 2017.04.26 |
| DEAL\_2 | LOANDEPO | CPTY\_2 | 2015.06.06 | Caa1 | INT\_17 | 2015.01.01 | 2017.04.26 |
| DEAL\_3 | FACILITY | CPTY\_2 | 2014.02.01 | Ba2 | MDY\_12 | 2012.01.01 | 2017.04.26 |

|  |  |  |
| --- | --- | --- |
| **TABLE** | CONTRACT\_REFERENCE | DIM14 |
| REPO | DEAL\_1 | B3|INT\_16 |
| LOANDEPO | DEAL\_2 | Caa1|INT\_17 |
| FACILITY | DEAL\_3 | Ba2|MDY\_12 |

**Revert and Rerun**

In Event that there is some error on the batch, and rerun is required, those record where INPUT\_DATE = rerunning of REPORTING\_DATE AND IMPORT\_SOURCE = <<Specified source system>>will be deleted. The rerun will be similar to the NORMAL run.

For Example. Data from BLE on 2017.04.26 to be deleted for rerun.

BEA\_DEAL\_ORI\_RATING (Before)

|  |  |  |  |
| --- | --- | --- | --- |
| CONTRACT\_REFERENCE | TABLE\_NAME | INPUT\_DATE | IMPORT\_SOURCE |
| DEAL\_1 | REPO | 2017.04.26 | BLE |
| DEAL\_2 | LOANDEPO | 2017.04.26 | BLE |
| DEAL\_3 | FACILITY | 2017.04.26 | TFS |
| DEAL\_4 | REPO | 2017.01.01 | BLE |
| DEAL\_4 | LOANDEPO | 2017.01.01 | BLE |

BEA\_DEAL\_ORI\_RATING (after)

|  |  |  |  |
| --- | --- | --- | --- |
| CONTRACT\_REFERENCE | TABLE\_NAME | INPUT\_DATE | IMPORT\_SOURCE |
| ~~DEAL\_1~~ | ~~REPO~~ | ~~2017.04.26~~ | ~~BLE~~ |
| ~~DEAL\_2~~ | ~~LOANDEPO~~ | ~~2017.04.26~~ | ~~BLE~~ |
| DEAL\_3 | FACILITY | 2017.04.26 | TFS |
| DEAL\_4 | REPO | 2017.01.01 | BLE |
| DEAL\_4 | LOANDEPO | 2017.01.01 | BLE |

**Housekeeping**

* Updating of BEA\_DEAL\_ORI\_RATING.LAST\_SEEM\_DATE

When LAST\_SEEM\_DATE = NULL. Compare if record is on the instrument table, if it is not , update this field with the previous reporting\_date of the context.

When LAST\_SEEM\_DATE is not NULL. Compare if record is on instrument table , if it exists , update the field to NULL.

* When the LAST\_SEEM\_DATE < REPORTING\_DATE by 30 days, Deleted the record away.

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to

# Retail PiT PD and Stressed LGD handling

## Business Requirement

## Data Requirement

**Pre-requisites**

* Custo #9 should be completed
* Custo #6 should be completed
* BEA would upload another set of internal rating master scale for RETAIL with the AGNECY\_CODE = INT\_RETAIL via the BEA\_RATING\_MASTER
* Also, another scalar factor for different retail pool would be uploaded by BEA via the BEA\_RETAIL\_MULTIPLIER
* BEA would provide the Stressed LGD schedule for 5 scenarios with 12 quarters result via the BEA\_STRESSED\_LGD

**Requirement**

1. PiT PD handling

Step 1:

All the retail transaction with DIM6 in (13,14,15,16,17) at this moment should have both RETAIL\_POOL code (due to custo#9) and also the corresponding PD grade (due to custo#6) in the DIM15 column.

Then the counterparty\_code in LOANDEPO and FACILITY for all retail transactions will then be updated to the format <RETAIL\_POOL> || \_ || <PD GRADE>, e.g. HK\_CREDIT\_CARD\_7.

<RETAIL\_POOL> should be from LOANDEPO.RETAIL\_POOL

<PD\_GRADE> should be retrieved from the first set of value in LOADNEPO.DIM15, with the delimiter of ‘|’

Before updating the counterparty code, counterparty code information need to back up to DIM12 in both LOANDEPO and FACILITY table.

Step 2:

Get the full set of <RETAIL\_POOL> || \_ || <PD\_GRADE> from BEA\_RETAIL\_MAR\_PD\_TERM and insert into RETAIL\_PD\_POOL, together with the ONE\_YEAR\_PD value retrieved from RATING table with the AGENCY\_CODE = ‘INT\_RETAIL’.

Step 3:

Based on the user’s upload – BEA\_RETAIL\_MAR\_PD\_TERM, except the ONE\_YR\_MAR\_PD which is expected to be retrieved from Step 2 above and multiply by the scalar factor from BEA\_RETAIL\_MULTIPLIER, the rest of the marginal PD (from 2 year to 10 year) are expected to be retrieved from this BEA\_RETAIL\_MAR\_PD\_TERM. After the following conversion is done, the final cumulative PD is expected to be inserted into ENTITY\_PD\_INPUT table:

* Marginal PD to Marginal Survival PD
* Marginal Survival PD to Cumulative PD

Step 4:

In case one of the risk factor (LGD\_VARIANCE / CREDIT\_SENSITIVITY / RECOVERY\_SENSITIVITY / CREDIT\_RECOVERY\_CORR) under BEA\_RETAIL\_MULTIPLIER is filled in for any of the retail pool, then get the full set of entity with the same retail pool.

Then insert that set of entity into GCORR\_ENTITY\_SENSI with the risk factors filled in above, together with the GCorr version as stated in the GCORR\_VERSION.

Illustrative example attached below for reference:



1. Stressed LGD handling

The BEA\_STRESSED\_LGD will be updated quarterly by BEA. So that it is expected that by every end of the quarter, this configuration will be updated by BEA with the date specify under the BEGIN\_DATE and END\_DATE.

The handling for different scenarios is provided below for detailed explanation.

Illustrative example attached below for reference:



## Proposed Design

1. PiT PD handling

Refer to Step 1:

* The DIM12 in LOANDEPO / FACILITY will be used to back up the original COUNTERPARTY\_CODE
* Then the COUNTERPARTY\_CODE in LOANDEPO / FACILITY will be updated accordingly.

Refer to Step 2:

* Full set of retail PD provided from BEA\_RETAIL\_MAR\_PD\_TERM will be inserted into RETAIL\_PD\_POOL with the PD value defined in the RATING table under the INT\_RETAIL agency code.

Refer to Step 3:

* The converted and transposed result will be inserted into ENTITY\_PD\_INPUT table.

1. Stressed LGD handling

It is expected that the MKT\_LGD\_INPUT table will be updated accordingly on each of the RCO run. To ensure the latest stressed LGD provided in BEA\_STRESSED\_LGD should be reflected in the MKT\_LGD\_INPUT. The term should be calculated based on each reporting date run.

## Procedure definition

# Inter-company Elimination

## Business Requirement

<<To be update>>.

## Data Requirement

**Pre-requisites**

* The weighted ECL impairment loss customization as stated in Section 12 is completed
* The result should already in T\_ALM\_ANALYTICS

**Requirement**

Some of the transaction is expected to be eliminated in SOLO / CONSO level depends on the relationship between the counterparty and the dealing company.

As stated in FSD – Section 5.4 on the inter-company elimination logic, there are two main different handling:

On-balance transaction:

1. For On-balance transaction under Head Office, when the counterparty code within the COA is either AE01 or AE03, this transaction is expected to be eliminated in the console level.
2. For On-balance transaction under China / Macau / Taiwan, when the affiliate code within the COA, which is uploaded by BEA user via the STG\_BEA\_CONSO\_AFF\_CODE, this transaction is expected to be eliminated in the console level
3. For On-balance transaction not within listed in i and ii above, when the contract type with suffix of ‘-10’, ‘-11’, ‘-12’, ‘-13’, this transaction is expected to be eliminated in the console level.

Off-balance transaction:

For those transaction with the dummy COA, which start with 00000000, the same logic from RDS would be implemented for IFRS9. There are total of three lookup tables, namely, BEA\_ELIM\_RULES, BEA\_CTPY\_RELATIONSHIP and BEA\_BU\_DEP, which required to be provided from BEA user.

Illustrative example attached below for reference:

**

## Proposed Design

Based on the illustrative example as attached above, there should be two different result in CUSTOM\_DIMENSION\_10 and CUSTOM\_DIMENSION\_19 to be assigned on each transaction in T\_ALM\_ANALYTICS to indicate whether the transaction should or should not be exist in CONSO and / or SOLO level by INCLUDE or EXCLUDE respectively.

## Procedure definition

PACK\_BEA\_IFRS9

This procedure is to be executed after the weighted ECL customization as stated in Section 12 within this document.

# Appendix 1 - Custom

Below table illustrate