A Cognos TM1 & Planning Analytics

Artifact for

Rolling Forecast & Planning

Prepared:

April 2015

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Notices & Disclaimers

Document Version History

Date	Version	Author	Description
4/8/2014	1.0	Andreas Kugelmeier	
6/18/2015	1.1	Andreas Kugelmeier	Fix Time Dimension weights for '<YYYYMM> YTD Variance' rollups
6/7/2015	1.11	Andreas Kugelmeier	Misc. minor changes to codebase
10/9/2015	1.12	Andreas Kugelmeier	Fix/Replace embedded zip archive
11/12/2015	1.2	Andreas Kugelmeier	Update design template (rules fix for Time Period TotalDays Attribute calc)
11/20/2015	1.3	Andreas Kugelmeier	Update sample rules in design template and in document
11/30/2016	1.4	Andreas Kugelmeier	Misc. code fixes & edits, add section for FX

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1. About this document

This TM1 artifact provides a template for a Forecasting & Planning Model based on proven TM1 practices. The artifact consists of the following main components:

- A reference Forecasting & Planning cube with

- Rules for rolling forecast and planning as well as related/typical variance analysis

- A Version dimension and Version management module with a design according to the paper

  Proven Practices, Design Examples & Templates for Version & Scenario Management and Variance Analysis with IBM Cognos TM1

- A time dimension with a design according to

  Proven Practices and Design Templates for Continuous Time Period Dimension Design & Time-related (Variance) Analysis with IBM Cognos TM1

- A FX Conversion reference Model

- FX Conversion reference rules

This document primarily documents the rules in the sample Forecasting & Planning cube called 'Operating Revenue And Expense'. The cube rules are designed to be rapidly portable to other cubes. The rules however require
- the use of a continuous time dimension just like 'Time Period.dim' in this Artifact. 'Time Period.dim' was designed according to proven practices for a Continuous Time Period dimension &
- the use of a version/scenario dimension just like 'Version.dim'. 'Version.dim' was designed according to proven practices for Version & Scenario Management and Analysis.

As part of reviewing this artifact, the review of the two proven practice documents on Continuous Time Period dimension design and on Version and Scenario management and Analysis is strongly recommended.

2. FX Model

2.1 Overview

FX model
- Input of Foreign Currency to USD FX rates,
- Triangulation of other FX rates via USD FX rates per FX cube rule

FX
Transaction Currency
Currency
Version
Time Period
FX Measure
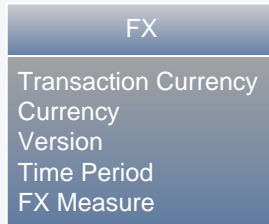
The FX model holds FX rates (Actual rates and BP rates) that are used for FX conversion from Transaction currency (local, legal entity currency data) to Reporting Currency. The dual-FX dimension design allows the model to provide FX rates for any FX combination.

2.1.1 Transaction Currency Dimension
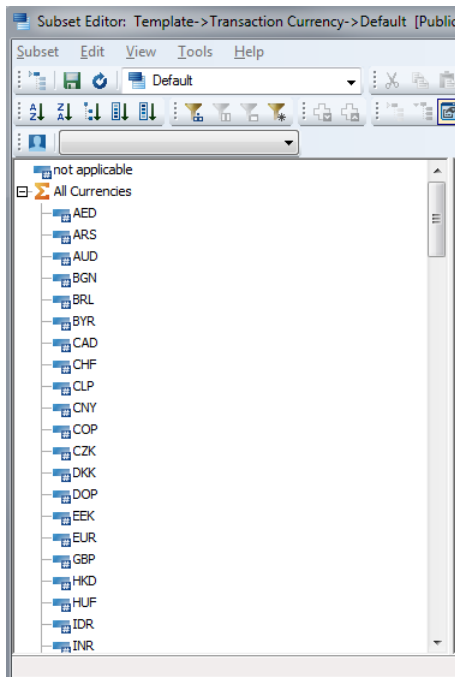
Non $ inputs are stored against element 'not applicable'. Transaction Currency Inputs are stored against their respective 3-character FX Codes. The element 'All Currencies' in this dimension is needed to consolidate transaction currency translations: let's say we have transactions in USD, EUR & GBP; all are to be translated to USD (USD element in the reporting currency dimension). To get a total USD Reporting Currency output, we have to look at 'all' transactions (but translated).

2.1.2 Reporting currency Dimension
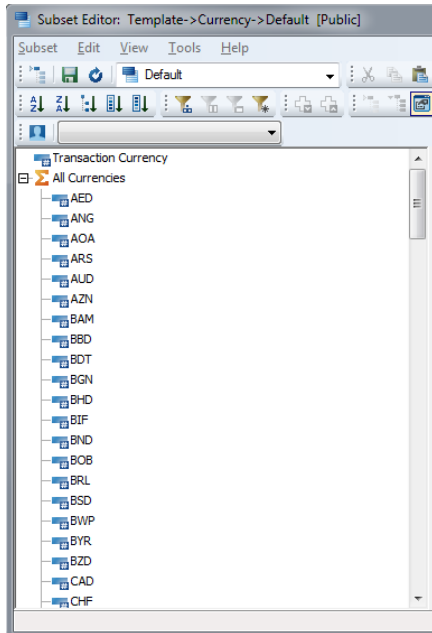
Transaction Currency Inputs are stored against element 'Transaction Currency'. FX translation rules are applied to all currencies (3-character FX Code). The element 'All Currencies' in this dimension should be ruled to 0, it is only needed for feeding purposes (i.e. transaction currency' values feed to 'All Currencies' to 'feed' translation to all reporting currencies).

2.2 FX rate Data Requirements

As an input, the FX model needs USD FX rates in the following format: **Foreign Currency Unit = 1USD * *FX Rate* = X USD** (Example: 1EUR = 1USD * FX Rate = 1.3 USD).

Foreign Currency	Reporting Currency	Version	TimePeriod	FX_Type	FX_Rate
EUR	US	Actual	YYYYMM	...	1.3

While rules are pre-configured for USD FX rates input, any other currency or currencies can or course be handled instead or in addition.

2.3 FX translation

2.3.1 Triangulation

FX rates for USD to Foreign Currency are derived via the inverse of the former FX rate. The inverse rate:

Transaction Currency	Currency	FX Measure	201201	201202	201203	201204	201205
USD	EUR	Actual Rate Balance	$0.74	$0.72	$0.73	$0.72	$0.73
		Actual Rate PnL	$0.73	$0.74	$0.72	$0.73	$0.72
		Business Plan Rate	$0.00	$0.00	$0.00	$0.00	$0.00
	GBP	Actual Rate Balance	$0.61	$0.60	$0.60	$0.59	$0.60
		Actual Rate PnL	$0.60	$0.61	$0.60	$0.60	$0.59
		Business Plan Rate	$0.00	$0.00	$0.00	$0.00	$0.00
	USD	Actual Rate Balance	$1.00	$1.00	$1.00	$1.00	$1.00
		Actual Rate PnL	$1.00	$1.00	$1.00	$1.00	$1.00
		Business Plan Rate	$1.00	$1.00	$1.00	$1.00	$1.00

and also all other rates (Foreign Currency A to Foreign Currency B):

Transaction Currency	Currency	FX Measure	201201	201202	201203	201204
EUR	EUR	Actual Rate Balance	$1.00	$1.00	$1.00	$1.00
		Actual Rate PnL	$1.00	$1.00	$1.00	$1.00
		Business Plan Rate	$1.00	$1.00	$1.00	$1.00
	GBP	Actual Rate Balance	$0.82	$0.83	$0.83	$0.82
		Actual Rate PnL	$0.83	$0.82	$0.83	$0.83
		Business Plan Rate	$0.00	$0.00	$0.00	$0.00
	USD	Actual Rate Balance	$1.35	$1.38	$1.38	$1.39
		Actual Rate PnL	$1.38	$1.35	$1.38	$1.38
		Business Plan Rate	$0.00	$0.00	$0.00	$0.00

are derived via triangulation within the TM FX model:

```
SKIPCHECK;

#region Triangulation on USD
[] = C: 0;
[{'Actual','Forecast','Plan'}] = N:
    IF (!Transaction Currency @= !Reporting Currency,
    1,
    Continue);
[{'Actual','Forecast','Plan'},'Reporting Currency':'USD'] = N: stet;
[{'Actual','Forecast','Plan'}] = N:
    DB('FX', !Transaction Currency, 'USD', !Version, !Time Period, !FX Measure)
    * 1 \ DB('FX', !Reporting Currency, 'USD', !Version, !Time Period, !FX Measure);
#endregion

Feeders;
[{'Actual','Forecast','Plan'},'Reporting Currency':'USD'] => ['All Non-US Currencies'];
```

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2.3.2 FX translation in FOPM Cube(s)

Example Rules:

```
[{'Actual','Forecast','…'}]=N:
        IF(!Transaction Currency @= !Reporting Currency ,
                ['Transaction Currency'],
                [`Transaction Currency']
                *DB('FX', !Transaction Currency, !Currency, !Version, !Time Period, '<FX Type>'));
['Act @ BP Rate'] = N:
        ['Actual','Transaction Currency']
        * DB('FX', !Transaction Currency, !Currency, 'Actual', !Time Period, 'Business Plan Rate');
['Act @ Prior Month Rate'] = N:
        ['Actual','Transaction Currency']
        * DB('FX', !Transaction Currency, !Currency, !Version,
                ATTRS ('Time Period',!Time Period,'Prior Calendar Period'), '<FX Type>'));
```

2.4   FX Conversion Model Alternatives

2.4.1 Single- vs. Dual-FX-Dimension Model

The example FX conversion design rules design (see <FX translation in FOPM Cube(s)> above and <Rules template for Rolling Forecast, Planning, What-If Analysis and Variance Analysis> below) is based on a dual FX-dimension model to allow for higher transparency and calculation of Variances due to FX. Instead, one FX dimension could be used with transaction values stored against 'local currency' or 'transaction currency'.

2.4.2 Feeder-less, C-level FX translation model

For large cubes, an converting the FX conversion rules to feeder-less, C-Level rules can lead to performance gains (and significantly faster feeder-processing)[1]:

1. In dimension 'Currency', make element 'Transaction Currency' the N-level descendant of each reporting currency (now a C-level element),

2. The current FX conversion rules need to be changed from N: to C: type rules.

3. The FX conversion rules need to be applied at the Time Period leaf level only. For Consolidated Time Period Elements, the C-Level FX Month translations need to be consolidated via use of CONSOLIDATECHILDREN ('Time Period');
For as long as no TTD calculations have to be conducted and not many month translations are to be consolidated (like a quarter or year or rolling 24 months), the use of CONSOLIDATECHILDREN will not have a significantly negative performance impact.

4. The FX conversion feeders can then be removed,

5. In a dual FX dimension model, because FX is now translated at the C-level, an additional rule has to be added for consolidating the translation of multiple (different) transaction currencies. Example (rule highlighted below):
   ```
   #region no consolidation of different currencies
   #No consolidation of reporting currencies
   ['Currency':{'All Currencies','All Non-US Currencies'}] = C: 0;
   #For non-Headcount, FTE, Volume etc, No 'consolidation' of 'Transaction Currencies', i.e. set 'All Currencies' to 0 for 'Transaction Currency'
   ['Transaction Currency':'All Currencies','Currency':'Transaction Currency'] = C: 0;
   # consolidation of FX translations if using feeder-less C-level rules for FX calc
   ['Transaction Currency':'All Currencies'] = C: CONSOLIDATECHILDREN ( 'Transaction Currency' );
   #endregion
   ```

   Particularly in a scenario with many transaction currencies (like in the example model), the use of CONSOLIDATECHILDREN will result in a performance degradation, BUT: for larger size models, the performance increase from the C-level FX rules typically exceeds the negative impact of the CONSOLIDATECHILDREN rule(s).

   This step (5) is not necessary in a single FX dimension model.

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[1] For very large models (double-digit GB or higher), a C-level FX translation model may be paramount to achieving good performance because of significant feeder-processing time for leaf -level FX rules.

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2.4.3 Recommended approach to FX translation performance tuning when dealing with large cubes

1) build the model out using leaf-level FX conversion rules (as outlined & provided in this artifact).

2) Build a 2nd cube where the FX dimensions adhere to the above outlined feeder-less FX rule design (section <Feeder-less, C-level FX translation model>).

3) Use the rules from (1) and convert them to feeder-less c-level rules as outlined in <Feeder-less, C-level FX translation model>).

4) Add rules to consolidate Time Periods (CONSOLIDATECHILDREN)

5) If using a dual FX-dimension model, add a rule to consolidate translations form multiple transaction currencies

6) Compare performance between the two models

3. Rules template for Rolling Forecast, Planning, What-If Analysis and Variance Analysis

The rules template is deployed on the following sample cubes:
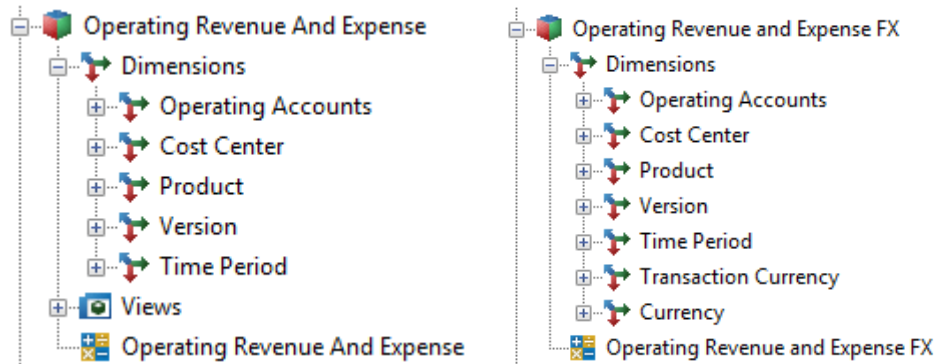
Key dimensions are:

- Operating Accounts (containing Measures/Accounts)

- Version (Actual, Forecast, Plan, What-If, Variances…)

- Time Period (a continuous time period dimension incl. Variance analysis rollups)

- A Transaction Currency dimension (FX model)

- A Reporting Currency dimension (FX model)

```
SKIPCHECK;

#region Rule Groupings in Version and Time period Dimension to 0
#note: Descendants are 0-weighted but C-Level rules may be applied => rule to 0 at beginning of rules file to avoid unnecessary/irrelevant consolidation
['Version':{'Open Versions','What If Scenarios','Historical Versions'}] = C: 0;
['Time Period':{'ALL_MONTHS','Months Grouped','Quarters Grouped','Years Grouped','Year to Date Grouped','Month YTD','Variances','Year-YTD','Month QTD','CALENDAR_ROLLUP'}] = C: 0;
#endregion

#region no consolidation of different currencies
#No consolidation of reporting currencies
['Currency':{'All Currencies','All Non-US Currencies'}] = C: 0;
#For non-Headcount, FTE, Volume etc, No 'consolidation' of 'Transaction Currencies', i.e. set 'All Currencies' to 0 for 'Transaction Currency'
['Transaction Currency':'All Currencies','Currency':'Transaction Currency'] = C: 0;
#endregion

#region Bal Sheet Account Consolidation
# Accounts that record Balances (Balance Sheet, Headcount) rather than movements (In come, Expense, P&L) should not be consolidated over time.;
# instead, the value for a consolidated time period needs to be = the value of the last leaf time period element for that consolidated time period.
# example: Total Assets for 2014 = Total Assets for 201412
# the below rule will automatically apply such calculation for 'End-Of-period' type accounts ('EOP'):
# 1) create Acct dimension attribute 'Type' and for Balance Sheet accounts, calculate 'Type' to be = 'EOP'
# 2)  => the value for Time Period attribute 'EOP Calculation Month' is calculated to be the last ACTUALS month of the consolidated time period
#     => the value for Time Period attribute 'EOP Calculation Month Non-Actuals' is calculated to be the last month of the consolidated time period
#     => the value for a bal sheet account in a cons. time period will be = the value of its last month period.
# becasue there is only a limited # of consolidated time periods, we 'hard-code' the consolidated time periods on in the rule area (left side of the rule).
# This will have TM1 evaluate the rule only for those time periods, hence significantly speeding up calculation time for other time period elements not in the rule area below

[{'YTD','Prior YTD','QTD','Prior QTD',
'2012-YTD','2013-YTD','2014-YTD','2015-YTD','2016-YTD','2017-YTD','2018-YTD',
'2012','2013','2014','2015','2016','2017','2018',
'201201 QTD','201202 QTD','201203 QTD','201204 QTD',
'201301 QTD','201302 QTD','201303 QTD','201304 QTD',
'201401 QTD','201402 QTD','201403 QTD','201404 QTD',
'201501 QTD','201502 QTD','201603 QTD','201504 QTD',
'201601 QTD','201602 QTD','201503 QTD','201604 QTD',
'201701 QTD','201702 QTD','201703 QTD','201704 QTD'
'201801 QTD','201802 QTD','201803 QTD','201804 QTD',
'201201 YTD','201202 YTD','201203 YTD','201204 YTD','201205 YTD','201206 YTD','201207 YTD','201208 YTD','201209 YTD','201210 YTD','201211 YTD','201212 YTD',
'201301 YTD','201302 YTD','201303 YTD','201304 YTD','201305 YTD','201306 YTD','201307 YTD','201308 YTD','201309 YTD','201310 YTD','201311 YTD','201312 YTD',
'201401 YTD','201402 YTD','201403 YTD','201404 YTD','201405 YTD','201406 YTD','201407 YTD','201408 YTD','201409 YTD','201410 YTD','201411 YTD','201412 YTD',
'201501 YTD','201502 YTD','201503 YTD','201504 YTD','201505 YTD','201506 YTD','201507 YTD','201508 YTD','201509 YTD','201510 YTD','201511 YTD','201512 YTD',
'201601 YTD','201602 YTD','201603 YTD','201604 YTD','201605 YTD','201606 YTD','201607 YTD','201608 YTD','201609 YTD','201610 YTD','201611 YTD','201612 YTD',
'201701 YTD','201702 YTD','201703 YTD','201704 YTD','201705 YTD','201706 YTD','201707 YTD','201708 YTD','201709 YTD','201710 YTD','201711 YTD','201712 YTD',
'201801 YTD','201802 YTD','201803 YTD','201804 YTD','201805 YTD','201806 YTD','201807 YTD','201808 YTD','201809 YTD','201810 YTD','201811 YTD','201812 YTD',
'20121','20122','20123','20124',
'20131','20132','20133','20134',
'20141','20142','20143','20144',
'20151','20152','20153','20154',
'20161','20162','20163','20164',
'20171','20172','20173','20174',
'20181','20182','20183','20184'}]=C:
        IF ( ELLEV ( 'Version', !Version ) = 0,
# adjust to 'Account' dimension used, i.e. change from 'Operating Accounts' to the name of the account dimension used in the model

        IF ( ATTRS ('Operating Accounts', !Operating Accounts, 'Type')@= 'EOP',

                IF ( SCAN ( 'ACT', UPPER ( !Version ) ) > 0 ,
```

```
# Adjust DB() formulas/references to cube
# ATTRS('Time Period',!Time Period,'EOP Calculation Month') is calculated automatically for Consolidated Time Periods based on
# for past time periods: the last month in the consolidated time period
# for current time periods: the last actualized month in the consolidated time period (based on the current month as per lookup cube 'SYS_IBM_Control'
# example: if the last actualized month is July, the total Assets for 2014  shall not be = Assets in 201412 (=0) but = Assets in 201407

        DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, !Version,ATTRS('Time Period',!Time Period,'EOP Calculation Month'),!Transaction Currency,!Currency),
# ATTRS('Time Period',!Time Period,'EOP Calculation Month Non-Actuals') is calculated automatically for Consolidated Time Periods based on
# for past time periods: the last month in the consolidated time period
# for current FCST/Plan time periods: the last input month in the consolidated time period
        DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, !Version,ATTRS('Time Period',!Time Period,'EOP Calculation Month Non-Actuals'),!Transaction Currency,!Currency)),

        continue),

        continue);

#endregion


#region Variances

#region Time period Variances
# note: the following rule leveraging CONSOLIDATECHILDREN may not be needed; it may be needed to 'overrule' other possible other C-Level rules that may otherwise be applied to the below elements;

#[{'QTD Variance','Prior Year QTD Variance','YTD Variance',
#'201401 YTD Variance','201402 YTD Variance','201403 YTD Variance','201404 YTD Variance','201405 YTD Variance','201406 YTD Variance','201407 YTD Variance','201408 YTD Variance','201409 YTD Variance','201410 YTD Variance','201411 YTD Variance',
#'201501 YTD Variance','201502 YTD Variance','201503 YTD Variance','201504 YTD Variance','201505 YTD Variance','201506 YTD Variance','201507 YTD Variance','201508 YTD Variance','201509 YTD Variance','201510 YTD Variance','201511 YTD Variance',
#'201601 YTD Variance','201602 YTD Variance','201603 YTD Variance','201604 YTD Variance','201605 YTD Variance','201606 YTD Variance','201607 YTD Variance','201608 YTD Variance','201609 YTD Variance','201610 YTD Variance','201611 YTD Variance',
#'201701 YTD Variance','201702 YTD Variance','201703 YTD Variance','201704 YTD Variance','201705 YTD Variance','201706 YTD Variance','201707 YTD Variance','201708 YTD Variance','201709 YTD Variance','201710 YTD Variance','201711 YTD Variance',
#'201801 YTD Variance','201802 YTD Variance','201803 YTD Variance','201804 YTD Variance','201805 YTD Variance','201806 YTD Variance','201807 YTD Variance','201808 YTD Variance','201809 YTD Variance','201810 YTD Variance','201811 YTD Variance'}]= C:
#        CONSOLIDATECHILDREN('Time Period');
['Prior Month Variance (%)'] = C: ( ['Current Month'] - ['Prior Month'] ) \ ['Current Month'];
['Prior Year Variance (%)'] = C: (['Current Month'] - ['Same Month Prior Year'])     \ ['Current Month'];
['QTD Variance (%)'] = C: ['QTD Variance'] \ ['QTD'];
['Prior Year QTD Variance (%)'] = C: ['Prior Year QTD Variance'] \ ['QTD'];
['YTD Variance (%)'] = C: ( ['YTD'] - ['Prior YTD'] ) \ ['YTD'];
#endregion

#region Version variance
['Act vs Plan % Var']=C:
        (['Actual'] -['Plan']) \['Plan'];
['Act Vs Forecast % Var']=C:
        (['Actual'] -['Current Forecast']) \['Current Forecast'];
['Forecast Vs Plan % Var']=C:
        (['Current Forecast'] -['Current Plan']) \['Current Plan'];
['Forecast Vs Prior Forecast % Var']=C:
        (['Current Forecast'] -['Prior Forecast'])\['Prior Forecast'];
['Act vs PY Act % Var']=C:
        (['Actual']
         -DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, STR(NUMBR(SUBST(!Time Period,1,4))-1,4,0) | SUBST(!Time Period,5,2),!Transaction Currency,!Currency))
```

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```
\DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, STR(NUMBR(SUBST(!Time Period,1,4))-1,4,0) | SUBST(!Time Period,5,2),!Transaction Currency,!Currency);
['Act vs PY Act % Var']=N:
        (['Actual']
         -DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, STR(NUMBR(SUBST(!Time Period,1,4))-1,4,0) | SUBST(!Time Period,5,2),!Transaction Currency,!Currency))
        \DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, STR(NUMBR(SUBST(!Time Period,1,4))-1,4,0) | SUBST(!Time Period,5,2),!Transaction Currency,!Currency);
['Act vs PY Act Var']=N:
        ['Actual']
         -DB('Operating Revenue And Expense FX', !Operating Accounts, !Cost Center, !Product, 'Actual', STR(NUMBR(SUBST(!Time Period,1,4))-1,4,0) | SUBST(!Time Period,5,2),!Transaction Currency,!Currency);# $ Var
and Var Exl FX calcs: calculate based on Version Dim Weights
# note: this rule is only needed to 'overrule' other possible other C-Level rules that may otherwise be applied to the below elements;

# note (cont.): it is acceptable to use CONSOLIDATECHILDREN as the # of children is low (2 elements in this case); CONSOLIDATECHILDREN should not be used against a very large # of child elements
#[{'Act vs Plan Var','Forecast vs Plan Var','Act Vs Forecast Var','Act vs PY Act Var','Forecast vs Prior Forecast Var'}] = C:
#        CONSOLIDATECHILDREN ( 'Version' );
#endregion
#endregion


#region rolling Forercast & Planning: rule in actuals, block non-input periods
# no actualization for periods < current actuals year
# this prevents data redundancies, allows to limit feeding of actualiziton to only the current year and thereby improves performance
[{'Plan','Forecast','What If Scenario 1','What If Scenario 2','What If Scenario 3'}] = N:
        If( NUMBR ( !Time Period ) < ATTRN( 'Version', 'Actual','Current Fiscal Year') * 100,
                0,
                continue);
# Rule in Actuals for time periods <= Actuals Through Date
[{'Plan','Forecast','What If Scenario 1','What If Scenario 2','What If Scenario 3'}] = N:
        If( NUMBR ( !Time Period ) <= ATTRN( 'Version', !Version,'Actuals Through Date'),
                ['Actual'],
                Continue);
# block data and input for time periods > Last Input Fiscal Period
[{'Plan','Forecast','What If Scenario 1','What If Scenario 2','What If Scenario 3'}] = N:
        If( NUMBR ( !Time Period ) > ATTRN( 'Version', !Version,'Last Input Fiscal Period'),
                0,
                Continue);
#endregion

#region FX
# stet Transaction Value
[{'Actual','Plan','Forecast','What If Scenario 1','What If Scenario 2','What If Scenario 3'},'Transaction Currency'] = N: stet;
#TBD: no FX Conversion for <TBD> (any data like headcount, FTEs, Volumes, ...)
#FX Conv
[{'Actual','Forecast','Plan','What If Scenario 1','What If Scenario 2','What If Scenario 3'}]=N:
        IF(!Transaction Currency @= !Currency,
                DB('Operating Revenue and Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, !Time Period, !Transaction Currency, 'Transaction Currency'),
                IF ( ATTRS ('Operating Accounts', !Operating Accounts, 'Is Balance Sheet Acct')@= 'Y',
        DB('Operating Revenue and Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, !Time Period, !Transaction Currency, 'Transaction Currency')
                *DB('FX', !Transaction Currency, !Currency, 'Actual', !Time Period, 'Actual Rate Balance Sheet'),
        DB('Operating Revenue and Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, !Time Period, !Transaction Currency, 'Transaction Currency')
                *DB('FX', !Transaction Currency, !Currency,'Actual', !Time Period, 'Actual Rate PnL')));
['Plan'] = N:
        IF(!Transaction Currency @= !Currency,
        DB('Operating Revenue and Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, !Time Period, !Transaction Currency, 'Transaction Currency'),
        DB('Operating Revenue and Expense FX', !Operating Accounts, !Cost Center, !Product, !Version, !Time Period, !Transaction Currency, 'Transaction Currency')
                *DB('FX', !Transaction Currency, !Currency, 'Actual', !Time Period, 'Business Plan Rate'));
#endregion
```

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```
feeders;

#region feeders
#region FX
 [{'Actual','Plan','Forecast','What If Scenario 1','What If Scenario 2','What If Scenario 3'},'Transaction Currency','Value'] => ['Currency':'All Currencies'];
#endregion

#region Variances
# Feed from Act Aliases (12 generic alias names like ActP01, ActP02... for each actuals month entered in Time Period Alias 'Current Actuals Periods'
# optimized feeder because FCST Actualization and Act vs PY Act is fed for only a limited # of months
['Actual',{'ActP01','ActP02','ActP03','ActP04','ActP05','ActP06','ActP07','ActP08','ActP09','ActP10','ActP11','ActP12'}] => ['Forecast'],['Plan'],['Act vs PY Act Var'];
['Actual',{'PYActP01','PYActP02','PYActP03','PYActP04','PYActP05','PYActP06','PYActP07','PYActP08','PYActP09','PYActP10','PYActP11','PYActP12'}] => ['Act vs PY Act Var'];
#endregion
#endregion
```

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4. Artifact Objects

https://ibm.box.com/s/cqcc1pm7cgg8kudvyafadb20dv8pthwe