The following is for Informational Purposes Only and is not in sync with our environment. You do not need to do any of the Exercises but reading it will deepen your understanding.

Use Case: Extend the coverage of the FRTB configuration in Summit

The Bank has already a FRTB process in place for their Interest Rates, FX and Fixed Income deals for USD, EUR and GBP currencies.

Due to increasing demand, they are going to launch an offer for interest rates options on JPY currency. Therefore, they want to extend the coverage of their FRTB configuration in order to compute the capital charge including these new market data and trades.

The test trade is a JPY European swaption. As it is an option, for a FRTB perspective, this trade requires:

1. Delta
2. Vega
3. Curvature

Connect to the environment

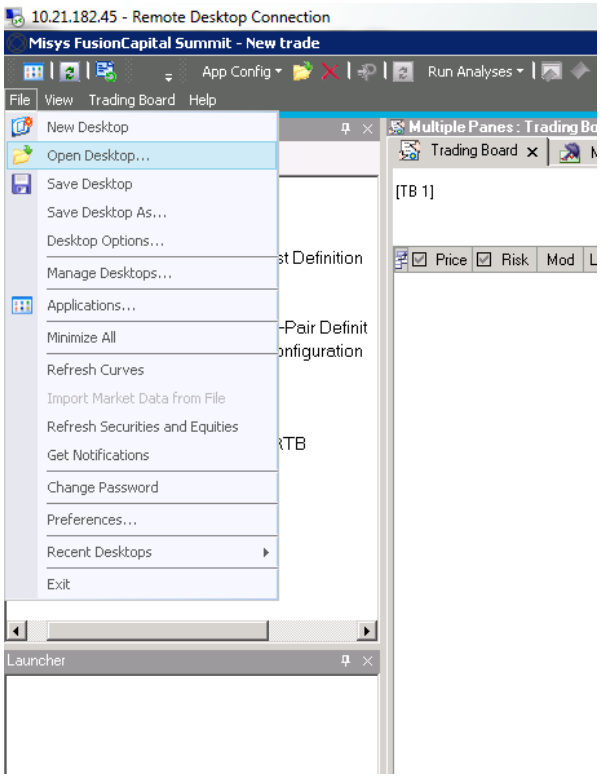
1. Login information:

   Not provided as it's a sample only

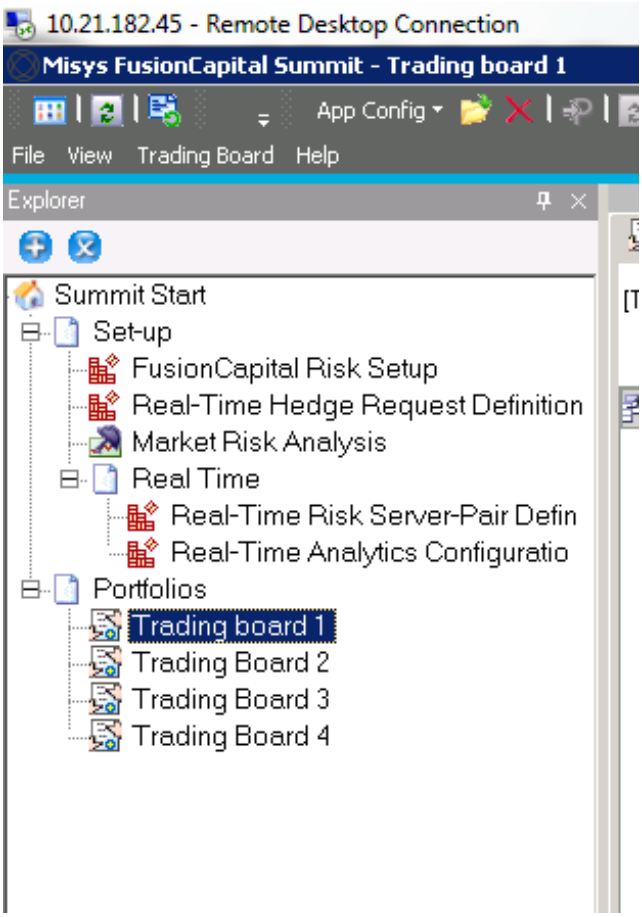
Exercise 1: run end-to-end with the current configuration of FRTB

I. Run the end-to-end:

- Open the desktop "NOT PROVIDED"

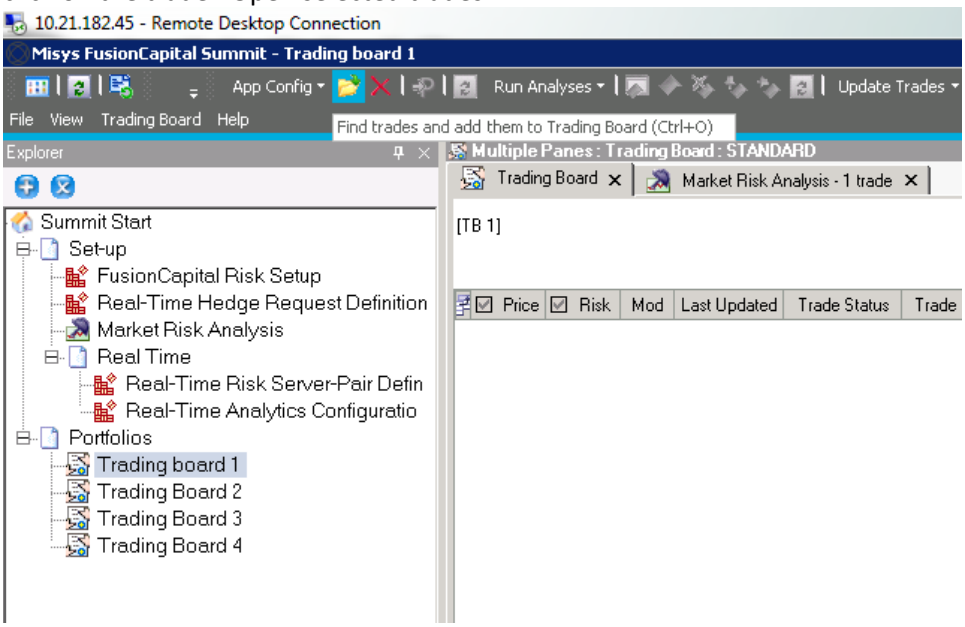


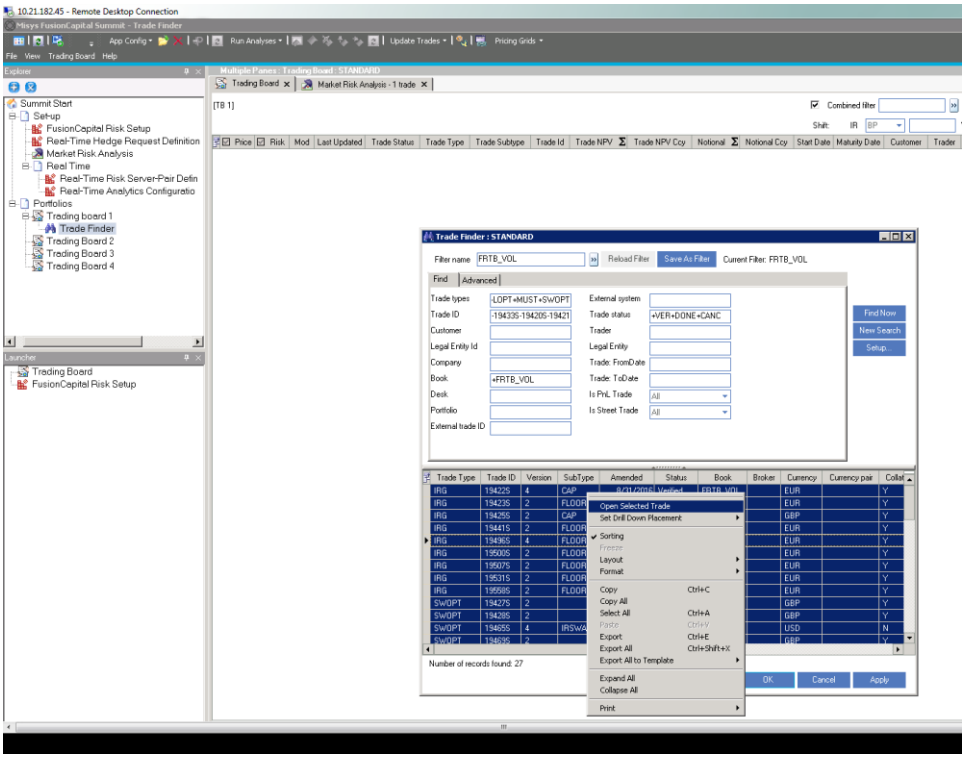
- Open the trading board 1 application from the explorer



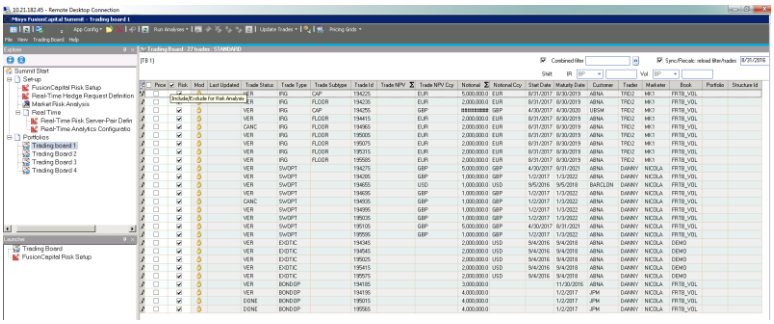
- Open the trade filter (*frtb_vol*)

  Open->Input the filter name->click on “find now” -> right click on the trade : Select all -> right click on the trade : Open selected trades

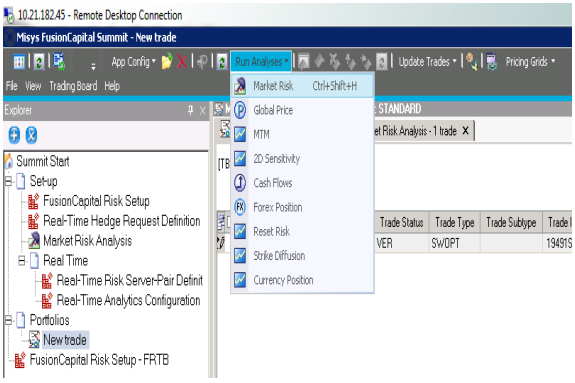




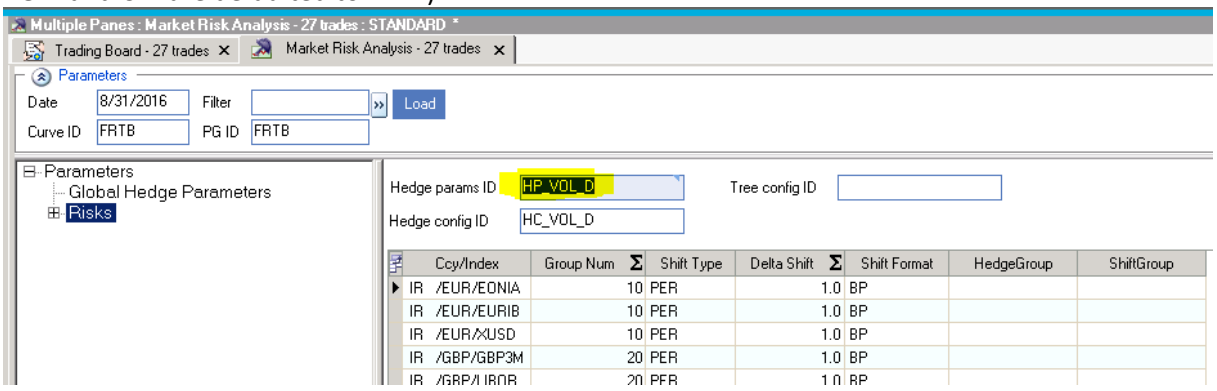
- Select all the trade in the risk configuration



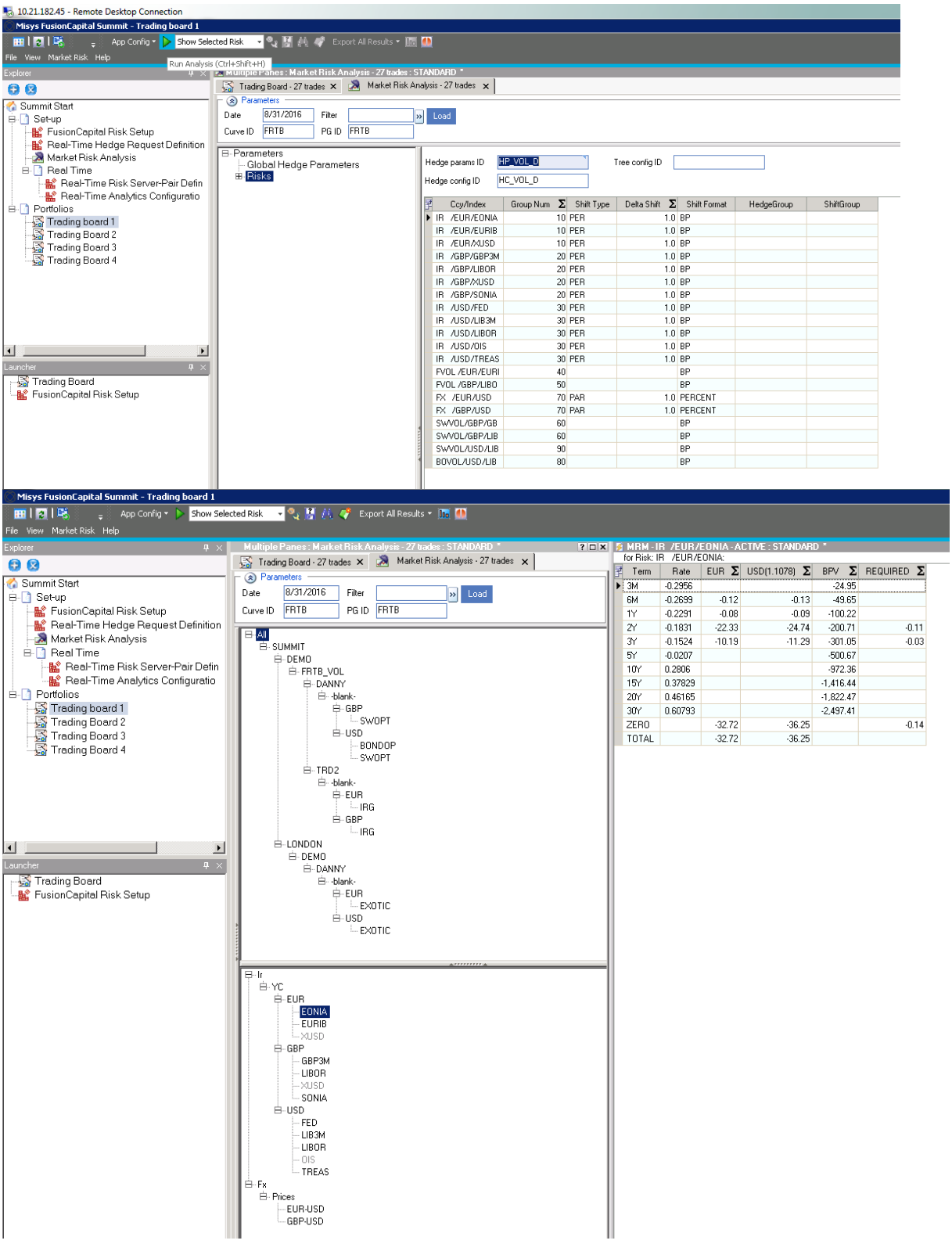
- Launch a market risk analysis on all the trades



- Specify the FRTB hedge parameters (hp_vol_d): this is the configuration for delta (note that PGID and CID are defaulted to FRTB)

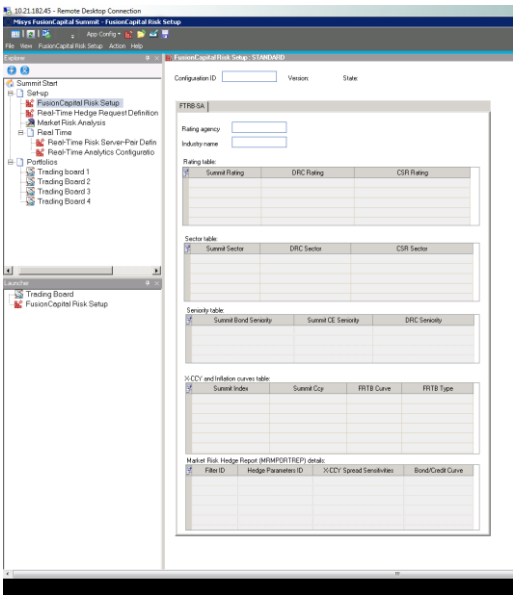


- Run the market risk and check that there is no error (click on the green arrow)

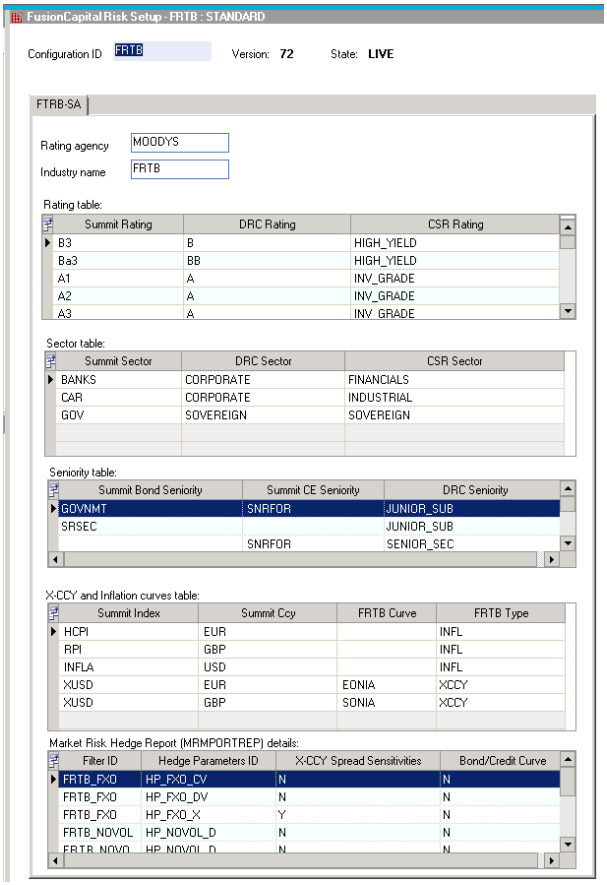


- Open the Trading Board 2 application, and relaunch a new MRA using the hedge config (*hp_vol_vcv*): this is the configuration for curvature and vega.

- Open the FusionCapital Risk Set-up Application from the explorer



- Open the Configuration ID called *FRTB (open -> type FRTB -> open)*



All the set-up done here will be used as examples for the next part.

Exercise 2 - Part 1: Create a stand-alone test configuration for the new trade

Some set-up has already been done for this new trade:

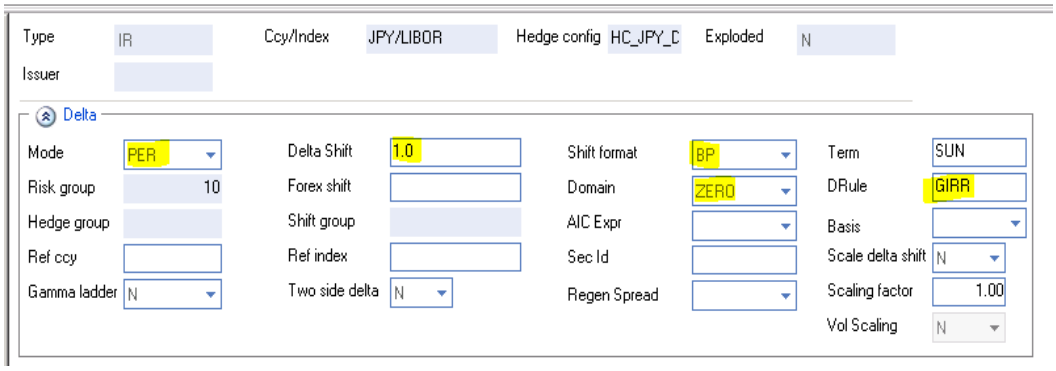
- The new trade is already book with trade id <NOT PROVIDED AS IT'S JUST SAMPLE>
- The trade is part of the filter <NOT PROVIDED AS IT'S JUST SAMPLE>

For the user3 in remote environment, we will duplicate the trade in order to have a different trade than the user 1:

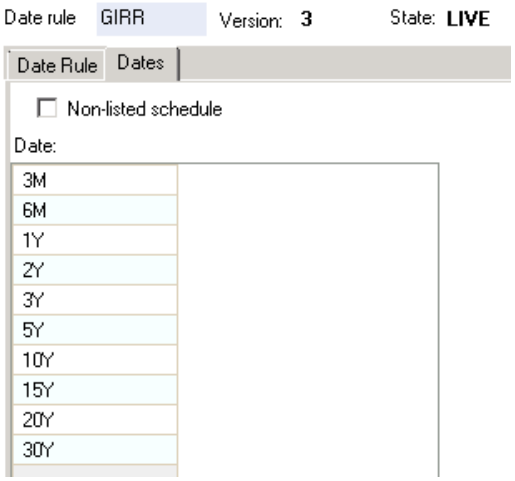
1. Open the trade using the swaption application
2. Perform save as action, name the trade X
3. Perform the do action and note down the trade id
4. Open the filter <NOT PROVIDED AS IT'S JUST SAMPLE> and save as <NOT PROVIDED AS IT'S JUST SAMPLE>
5. Modify the trade id in the filter definition by your new trade id

Configuration in Summit of the sensitivity computation

1) Open the trading board 3 application and open the filter id (<NOT PROVIDED AS IT'S JUST SAMPLE> if you qre the user3)
2) Go in Real time hedge request application
3) Set-up of a hedge request used for delta
    a. Open the hedge request call "Vol_VCV"'
    b. Remove the hedge configuration parameter
    c. Save real time hedge request as KT_D (add "_2" at the end of the name if you are the user 3 on remote env)
    d. Save hedge parameter as D_JPY (add "_2" at the end of the name if you are the user 3 on remote env)
4) Hedge request used for curvature and vega
    a. Same as steps 3) a) and b)
    b. Resave the hedge request as KT_C (add "_2" at the end of the name if you are the user 3 on remote env) and the hedge parameter as C_JPY (add "_2" at the end of the name if you are the user 3 on remote env)
5) Delta configuration:
    a) Launch a Market Risk Analysis (MRA) on this trade from the trading board and specify the hedge parameters for delta (D_JPY or D_JPY_2)
    b) Deselect the volatility risk (call SWVOL/JPY) -> right click on the risk and deselect risks
    c) Configure the delta for IR risks by clicking on the risk one by one. Input:
        i. Zero domain (Domain - > Zero) the shift is imposed to the generated zero rates
        ii. GIRR date rules (input GIRR)
        iii. 1 bp perturbed shift (Mode = Perturbed, Delta Shift = 1, Shift Format = BP)

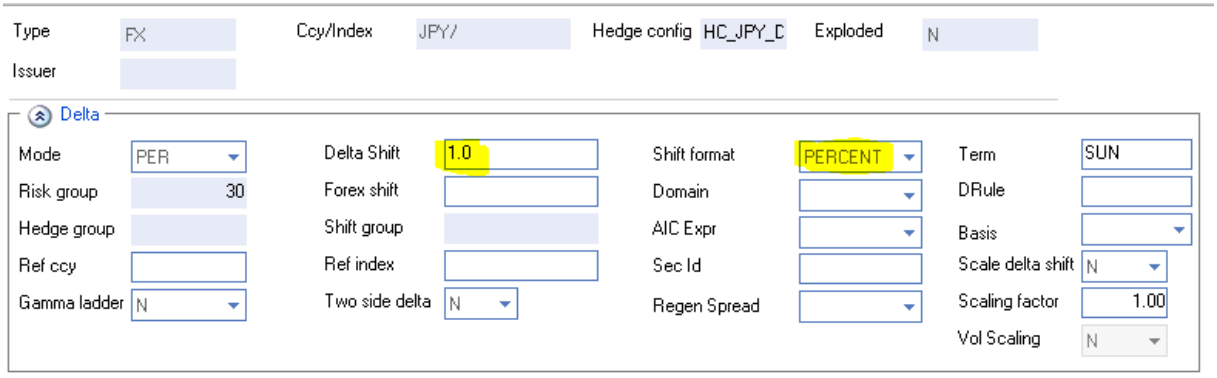


Date rule (already set-up)



d) Configure the delta for FX risks

   i. 1 percent shift (Delta Shift = 1, Shift Format = BP)



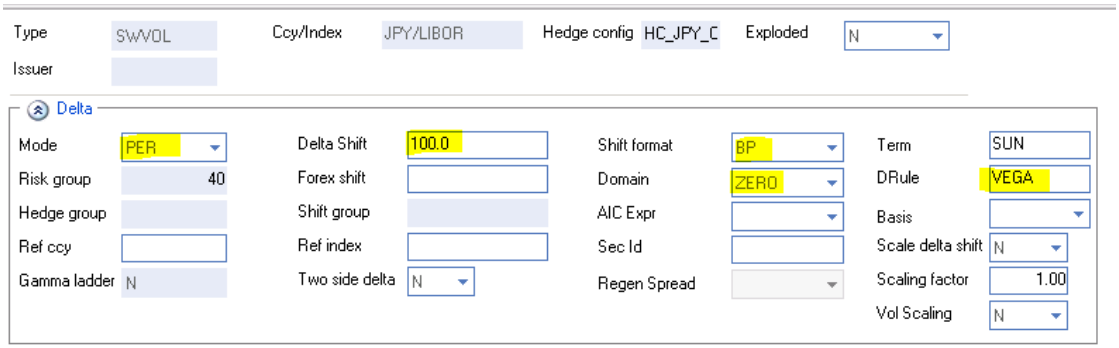
e) Save the hedge configuration (Market Risk -> Save Hedge Configuration as D_JPY (or D_JPY_2)

f) Launch the market risk analysis

g) Perform sanity checks on the results (any errors, any inconsistent figures…)

h) Go back on the real time hedge request application, open the hedge request for delta and specify the hedge configuration you have just input as D_JPY (or D_JPY_2)

6) Curvature and vega configuration
   a) Open the trading board 4 application and open the filter id (JPY_SWOP)
   b) Open the Market Risk Analysis and specify the hedge parameters for the curvature and vega (id : C_JPY or C_JPY_2)
   c) Risk factor configuration
      a. Configure the shift for vega on yield volatility
         i. 100 bp perturbed shift



      i. Configure the IR and FX curvature by replicating the set-up in the hedge parameters *hp_vol_vcv*
   d) Save the hedge configuration as C_JPY or C_JPY_2
   e) Launch the market risk analysis using the hedge parameter you have just input
   f) Perform sanity checks on the results (any errors, any inconsistent figures…)

7) Go back on the real time hedge request application, open the hedge request for vega and curvature
8) specify the hedge configuration you have just input C_JPY or C_JPY_2

9) Configure the FusionCapital Risk set-up application
   a) Open the FusionCapital Risk Application (ID: FRTB)
   b) Save it as a new name (FRTBKT or FRTBKT2)
   c) Clean the last table listing the trade id and the hedge parameters

   d) Add the 2 runs that are necessary:
      a. Delta and vega configuration

b. Curvature configuration

10) Save the application

11) Configuration of the cargo and the sensitivity batch run

a) Copy/paste the batch file (.cmd) to run the application (Located in G:/FRTB)

b) Keep only 2 lines of MRMPORTREP batch and modify the command lines at the end of the file:

a. Change the filter name (-F parameter)

b. Change the hedge config ID (-H parameter): the config will be different for the 2 batch lines: one config for delta and vega, one config for curvature.

c. Change the name of the files (-O parameters): the name of the files should be different for the 2 batch lines

Correction

```
start mrmportrep -f JPY_SWOP -cvid frtb -pgid frtb -hparms HP_JPY_C -detail -csv -yearfraction -specifics -timestamp -hidezerosens -o G:\FRTB\sensitivities\JPY_SWOP_frtb_vol_d.txt
start mrmportrep -f JPY_SWOP -cvid frtb -pgid frtb -hparms HP_JPY_D -detail -csv -yearfraction -specifics -timestamp -hidezerosens -o G:\FRTB\sensitivities\JPY_SWOP_frtb_vol_vcv.txt
```

c) Stop the FRTB cargo

d) Remove the current sensitivity files located in G:/FRTB/sensitivities

e) Modify the name of the FusionCapital Risk set-up in the server.conf file (located in G:\FRTB\generic-limits\etc\server.conf) to FRTBKT or FRTBKT2

f) Relaunch the cargo

g) Launch the MRMPORTREP report using the batch file

h) Check that the sensitivity files are generated in the folder G:/FRTB/sensitivities

i) Check that the sensitivities are inputted in the Fusion Insight

a. IR delta, vega and curvature

b. FX delta and curvature

j) Compare the sensitivities with the sensitivities from Market risk analysis

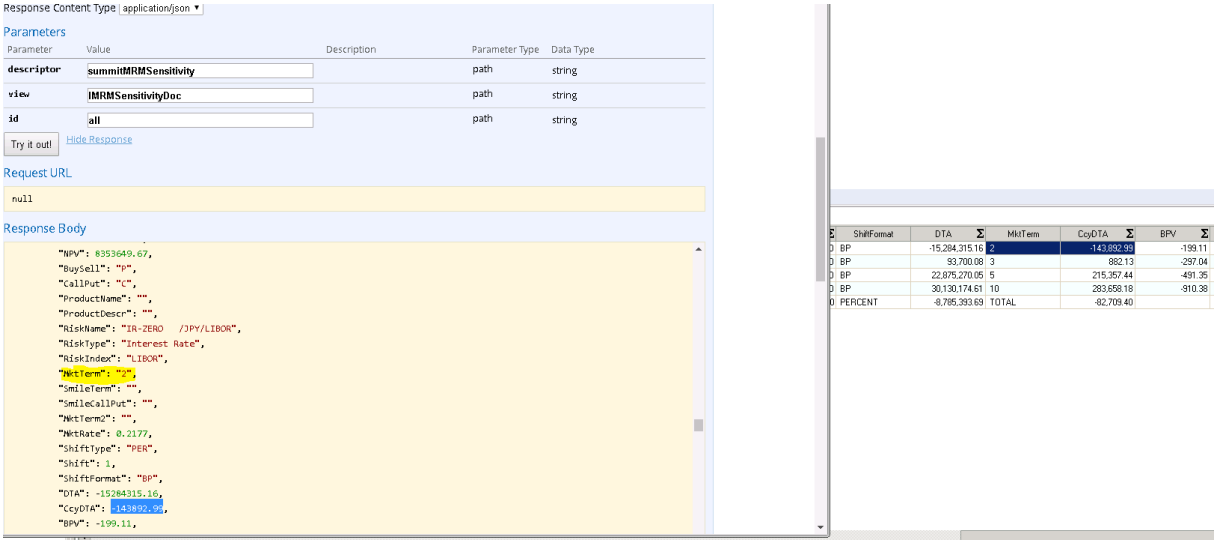
Exercise 2 - Part 2: Sanity checks on single configuration (optional step)

1. Check the data sent for this trade id in Dasel using swagger access the FRTB Integration function (login to swagger)

- **Swagger**
URL: http://localhost:8181/doc/#!/frtbintegration/get
User: misys
Password: misys

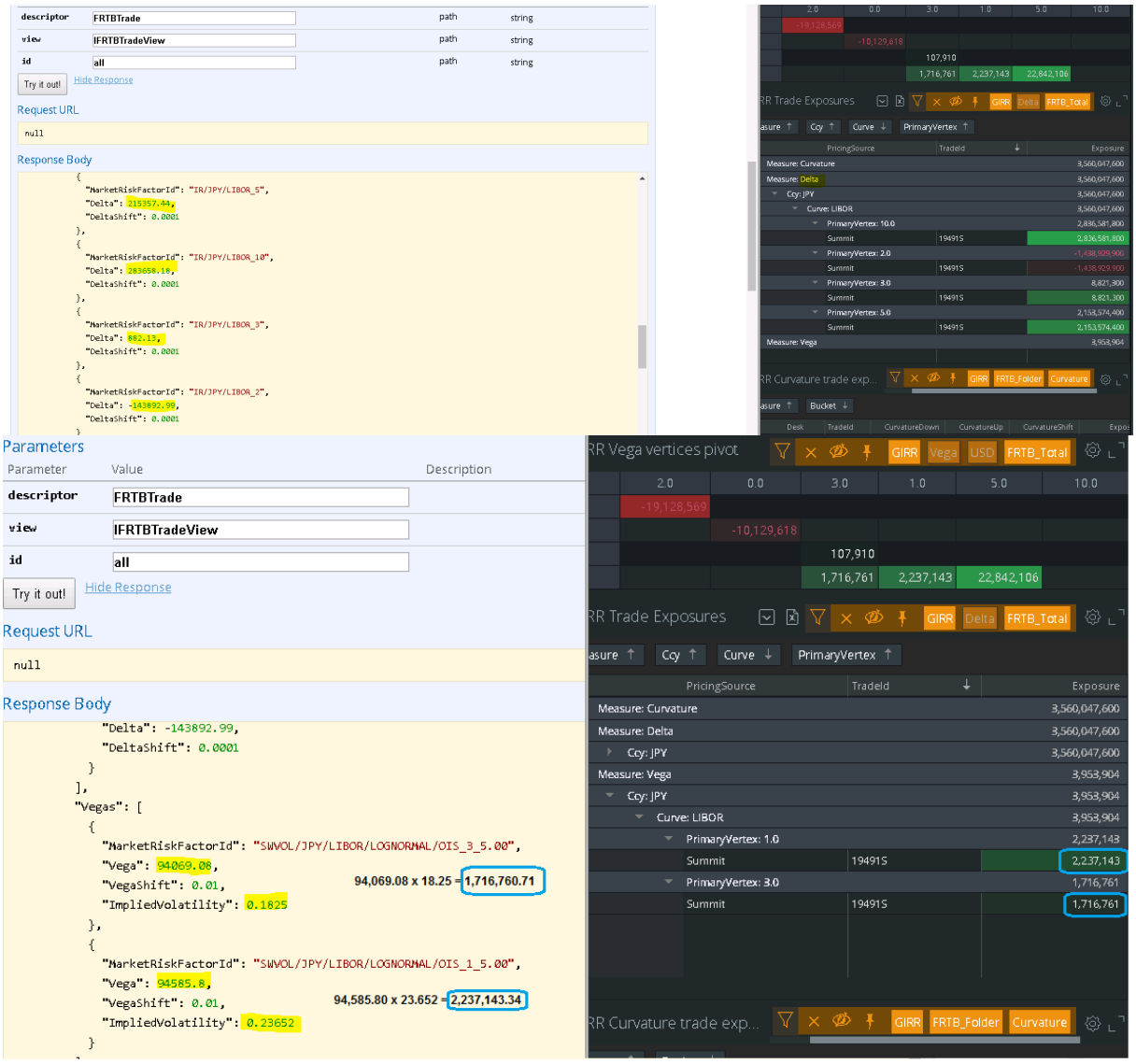
MRMPORTREP data

Descriptor: **summitMRMSensitivity**
View: **IMRMSensitivityDoc**
Id: ALL



Trade data

Descriptor*:* **FRTBTrade**
View: **IFRTBTradeView**
Id: ALL



Market risk factor data

Descriptor: **MarketRiskFactor**
View: **IMarketRiskFactorView**
Id: ALL

2. Compare the results in the dashboard for FRTB with the results of the MRA analysis for this trade for both curvature and delta/vega (trading board 3 and 4)

Exercise 2 - Part 3: Merge the 2 configurations

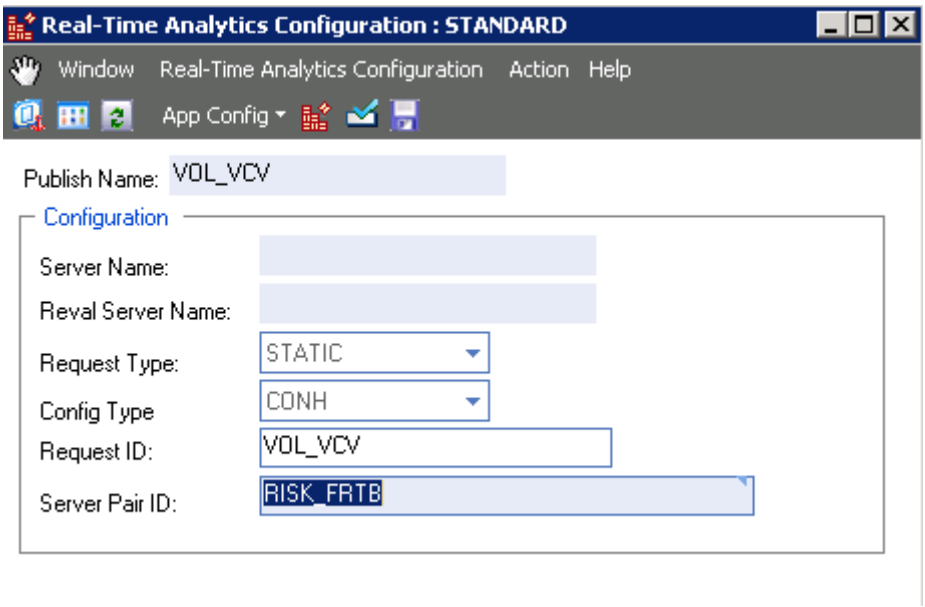
The aim of this section is to define a single configuration for FRTB by merging the existing

1. Shut down the cargo
2. Add the command line for the new trade in the previous MRMPORTREP file
3. In Summit, Modify the original (“FRTB”) FusionCapital Risk Set-up application adding the 2 lines with the 2 runs of MRMPORTREP
4. Modify back the “server.conf” file specifying that the “FRTB” FusionCapital Risk application will be used
5. In Windows: remove the sensitivity files in the sensitivity input folder
6. Launch the cargo
7. Launch the MRMPORTREP reports
8. Check the results in MRMPORTREP

Exercise 2 - Part 4: Real-time incremental configuration

1. Configure the real time Analytics Configuration mentioning the2 real time hedge request you have previously defined

Example:



3. Perform action on the new trade

- Modification
- Cancellation

Insert screenshot for description