



GreenPoint  
Financial

FORDHAM UNIVERSITY

# FRTB CAPSTONE COURSE 2019

FusionCapital Summit & SA Aggregator



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# SPECIAL THANK YOU

I want to provide special thank you to the following three people today.

Arnaud and Hugues have provided much of the material (thanks for letting me borrow this) for this and previous lectures in addition to designing the overall system architecture and prototypes early on. They are both quants in our Paris office and part of the Product Management team.

**Arnaud Nekam**

**Hugues Jan**

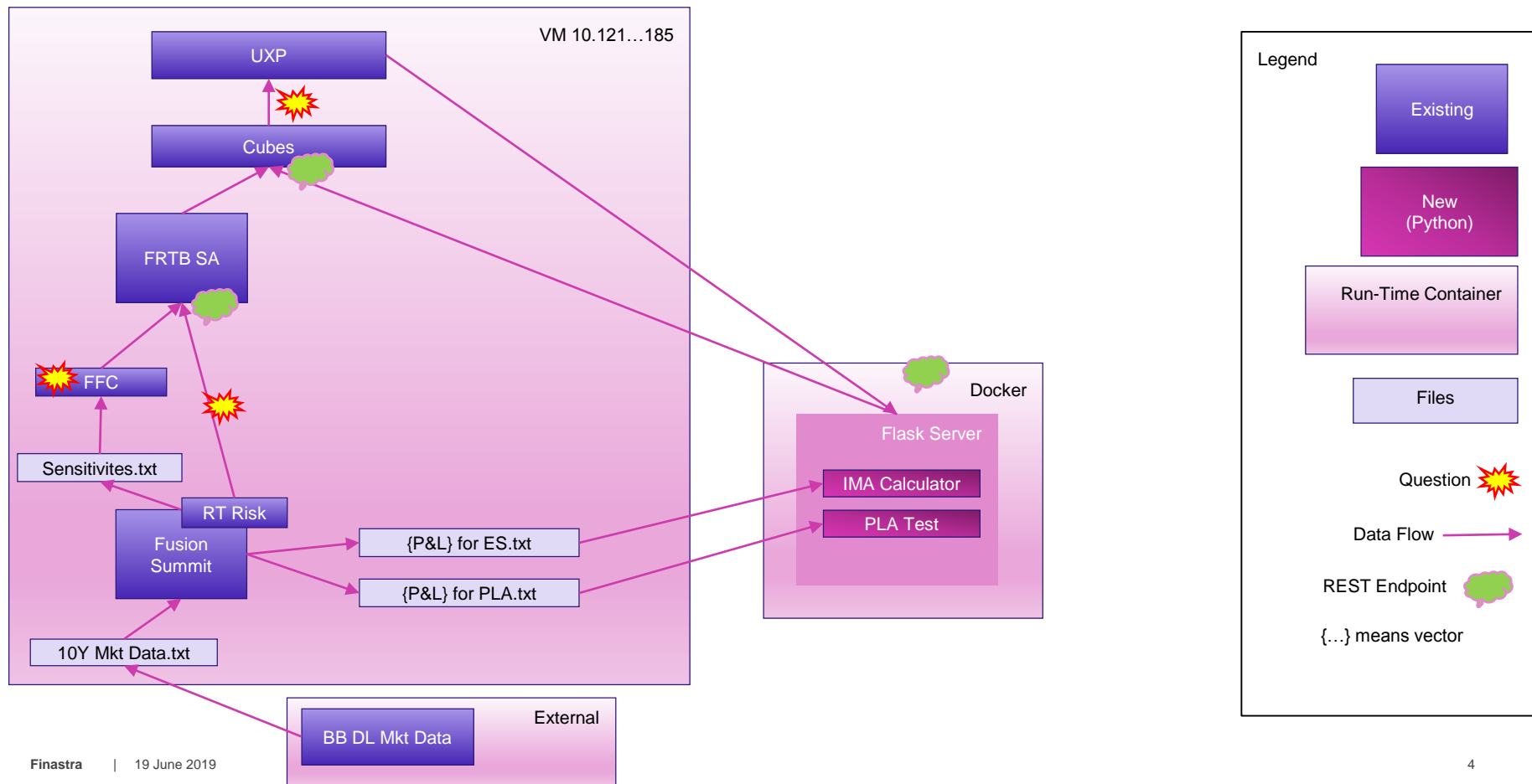
Randolph runs globally our Demo and Workshop systems for Capital Markets. He's deeply familiar with keeping systems reliable and high performing in addition to being an overall architect and advisor of the Fusion Platform.

**Randolph Reyes**

# ARCHITECTURE

This is real and work in progress

# FORDHAM 2019 AND STT CUSTOM APPLICATION ARCHITECTURE



# **SUMMIT SPECIFICS FOR FRTB EXERCISES OVERVIEW**

# TRADES

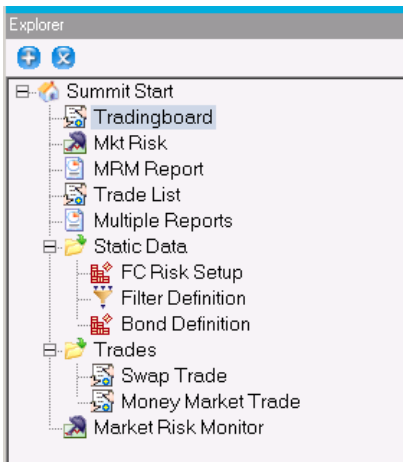
Trade Ids are just samples. Please create your own trades that match the description provided earlier.

Trading Board - 11 trades : STANDARD \*

[TB 4] ☒ Combined filter  >> ☒ Sync/Recalc: reload filter/trades 8/31/2016 FRTB PGID FRTB

Shift: IR BP Vol BP

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Price	<input checked="" type="checkbox"/> Risk	Trade Type	Trade Subtype	Trade Id	Trade NPV Σ	Trade NPV Coy	Notional Σ	Notional Coy	Start Date	Maturity Date	Customer	Marketer	Book	Desk
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWAP	IRSWAP	19747S	74,885.39	USD	10,000,000.00	USD	9/2/2016	9/2/2026	JPM	MK1	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWAP	IRSWAP	19748S	153,656.28	USD	12,000,000.00	USD	9/2/2016	9/2/2024	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWAP	IRSWAP	19752S	976.79	EUR	8,000,000.00	EUR	9/2/2016	9/2/2024	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWOPT		19751S	10,210.46	EUR	10,000,000.00	EUR	9/4/2018	9/4/2023	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BOND		0000002328	27,699,484.65		15,000,000.00	USD		9/1/2016	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BOND		0000002329	7,613,253.18		7,000,000.00	USD		9/5/2016	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MM	ADDON	19753S	-2,256.27	USD	5,000,000.00	USD	9/2/2016	6/2/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MM	ADDON	19754S		EUR	8,000,000.00	EUR	9/2/2016	9/2/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FXPWD		0000003242	76,134.59	USD	10,000,000.00	EUR	9/2/2016	3/2/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FXPWD		0000003243	-10,125.04	USD	-8,326,633.23	GBP	9/2/2016	4/3/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MUST	SN_CDS	19749S	-7,393.83	EUR	10,000,000.00	EUR			JPM	NICOLA	DEMO	DESKA



# TRADES CONT

FX Forwards have explicit books to set

FX Fwd Trade - [0000003242] : STANDARD

Window FX Fwd Trade Action Help

App Config

ID: 0000003242 Version: 2 State: Verified 8/31/2016 FRTB

Trade Diary: NO TradeCleared: NONE

Trade

Type  ☐ FX Fwd Flexible Value date Interest rate

Ccy pair EUR/USD ☐ B EUR 10,000,000.00 3/2/2017 181 d 0.15034

Split ccy ☐ ☐ S USD -11,078,400.00 0.15753

Split legs  Spot date 9/2/2016 Points 0.400000

Rollover status NOR Spot rate 1.1078 Fwd EUR/USD 1.10784

Cpty JPM Brk

Clearing house / Clearing member / Executing Broker

Window Currency Pair Definition Action Help

App Config

Ccy 1 (Main) / Ccy 2 (Money) EUR / USD Version: 56 State: LIVE

Detail FX Position Operations

Real-Time FX cash module is not activated. Settings editable in this view a

Location	P/L	Spot Book	Spot Desk
EURO_CORP	USD		
GLOBAL_MACR	USD		
LOCATION1	USD	FRTB_NOVOL	FX
LOCATION2	USD	FRTB_NOVOL	FX
MFS_NO.1	USD		
MFS_NO.2	USD		
MFS_NO.3	USD		
USD_GROWTH	USD		
XYZ_FUNDS	USD		

Defaults not used

Window

App Config

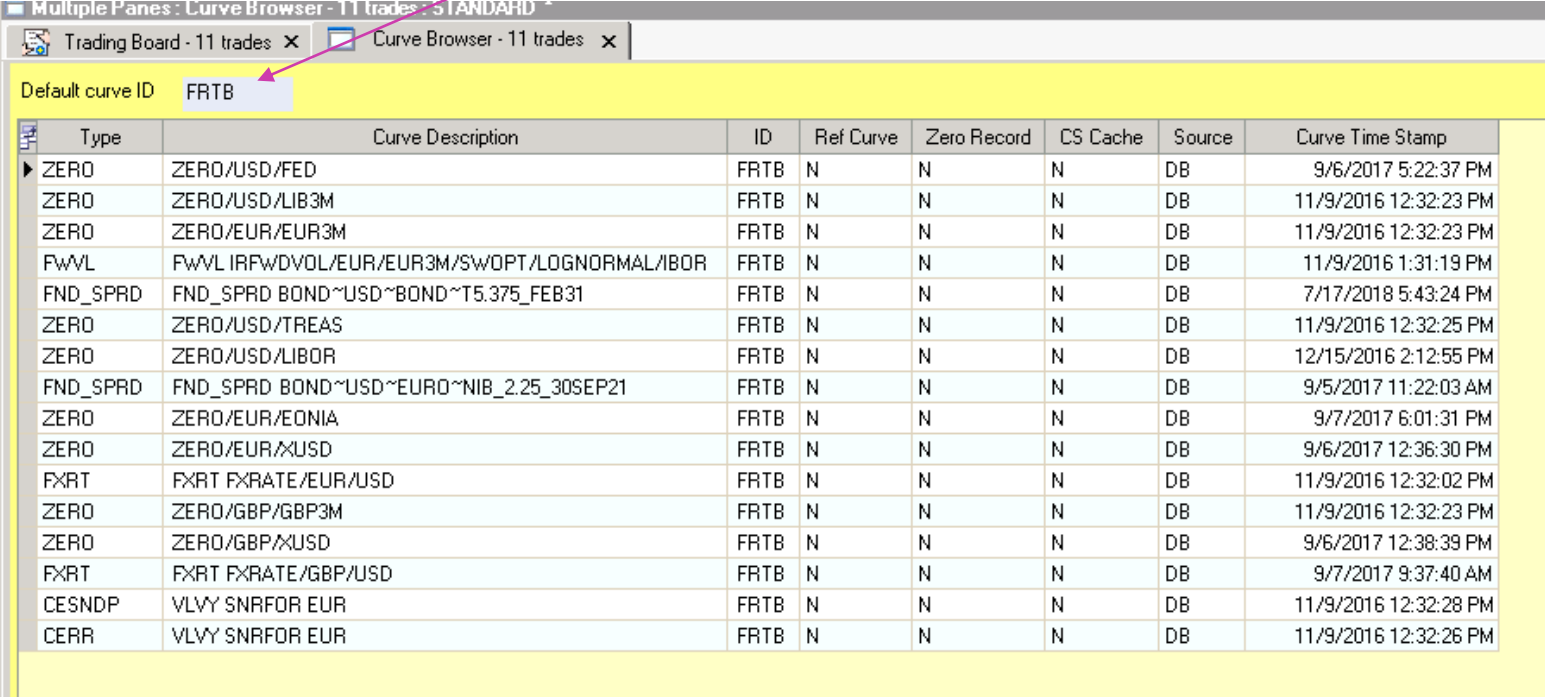
FX Fwd Trade - [TB01\_0002] x FX Books - [TB01\_0002] x

Ccy Pair	Book	Desk	Type
EUR/USD	DEMO	DESKA	SPOT
EUR/USD	DEMO	DESKA	SWAP

Set explicitly  
FXFwdTrade->Maintenance->Books

# MARKET DATA

FRTB curve id exists for today. Each team creates  
Their own curve ids and maintains the market data



Multiple Panes : Curve Browser - 11 trades : STANDARD +

Trading Board - 11 trades x Curve Browser - 11 trades x

Default curve ID FRTB

Type	Curve Description	ID	Ref Curve	Zero Record	CS Cache	Source	Curve Time Stamp
▶ ZERO	ZERO/USD/FED	FRTB	N	N	N	DB	9/6/2017 5:22:37 PM
ZERO	ZERO/USD/LIB3M	FRTB	N	N	N	DB	11/9/2016 12:32:23 PM
ZERO	ZERO/EUR/EUR3M	FRTB	N	N	N	DB	11/9/2016 12:32:23 PM
FWVL	FWVL IRFW/DVOL/EUR/EUR3M/SWOPT/LOGNORMAL/IBOR	FRTB	N	N	N	DB	11/9/2016 1:31:19 PM
FND_SPRD	FND_SPRD BOND~USD~BOND~T5.375_FEB31	FRTB	N	N	N	DB	7/17/2018 5:43:24 PM
ZERO	ZERO/USD/TREAS	FRTB	N	N	N	DB	11/9/2016 12:32:25 PM
ZERO	ZERO/USD/LIBOR	FRTB	N	N	N	DB	12/15/2016 2:12:55 PM
FND_SPRD	FND_SPRD BOND~USD~EURO~NIB_2.25_30SEP21	FRTB	N	N	N	DB	9/5/2017 11:22:03 AM
ZERO	ZERO/EUR/EONIA	FRTB	N	N	N	DB	9/7/2017 6:01:31 PM
ZERO	ZERO/EUR/XUSD	FRTB	N	N	N	DB	9/6/2017 12:36:30 PM
FXRT	FXRT FXRATE/EUR/USD	FRTB	N	N	N	DB	11/9/2016 12:32:02 PM
ZERO	ZERO/GBP/GBP3M	FRTB	N	N	N	DB	11/9/2016 12:32:23 PM
ZERO	ZERO/GBP/XUSD	FRTB	N	N	N	DB	9/6/2017 12:38:39 PM
FXRT	FXRT FXRATE/GBP/USD	FRTB	N	N	N	DB	9/7/2017 9:37:40 AM
CESNDP	VLVY SNRFOR EUR	FRTB	N	N	N	DB	11/9/2016 12:32:28 PM
CERR	VLVY SNRFOR EUR	FRTB	N	N	N	DB	11/9/2016 12:32:26 PM



# BOOKING HIERARCHY

Good naming conventions makes life easy

**Swap Envelope - [197475] : STANDARD**

Window Swap Envelope

App Config

Swap Trade - [197475] x Swap Envelope - [197475] x

Detail Parent Info & Comments

Portfolio			
Company	SUMMIT	Desk	DESKA
Rec Book	DEMO	Super-company	
Pay Book	DEMO		
Status	VER	Trade date	8/31/2016
RC		Trade entry date	8/31/2016
Folder		Back dated	Y
Trader	MK1	Spread	
Broker		Product group	
Marketer	MK1	Product type	
Deal ID		Structure ID	
Input time	8:42 PM	Execution timestamp	2018-07-16 20:42:34.219C
Legal Entity	LOCATION1		
Exotic underlying	N	Other residual risk	N

**FX Books - [TB01\_0002] : STANDARD \***

Window

App Config

FX Fwd Trade - [TB01\_0002] x FX Books - [TB01\_0002] x

Ccy Pair	Book	Desk	Type
EUR/USD	DEMO	DESKA	SPOT
EUR/USD	DEMO	DESKA	SWAP

# FILTER

**Filter Definition - TEAM1 : STANDARD**

Filter ID **TEAM1** Version: **1** State: **LIVE**

**Definition**

Description

Multiple filter names

**Trade types**

☒ Swap ☒ Cap/Floor ☒ Fra ☒ Swaption ☒ Exotic ☒ Bond ☒ Money market

☒ Repos ☒ FX spot ☒ FX swap ☒ FX forward ☒ FX option ☒ Trade accounts ☒ Bond option

☒ Bond basket ☒ Bond spread ☒ Futures ☒ Listed options ☒ Deal payments ☒ Stock trades ☒ Equity options

☒ Must ☒ External trade Strategy def method

Trade Product **Back Office** Instruments Extension Filter Info

Company  Desk  Book

Legal entity  Legal entity ID

# TRADE LIST

## Lists trade details and MTM

## Unselect FX Positions and Split

**Trade List - (11) : STANDARD \***

**Parameters**

As of Date: 8/31/2016 Curve ID: FRTB PG ID: FRTB

**Filter**

☒ Use trade filter: FINASTRA

☐ Quick trade filtering

Company: Desk: Book: Trade Type: Trade Status:

**View**

☒ Display MTM: ☒ NPV ☒ Net ☒ Accrual

☐ Display Greeks: ☐ Vega ☐ Theta ☐ Rho ☐ Gamma ☐ Delta ☐ Alpha

☒ Duration Modified: ☒ Pay ☒ Receive ☒ Trade Effective: ☒ Pay ☒ Receive ☒ Trade

MTM Parameters: Expression currency: EUR ☐ Spot valuation

☐ Theoretical bond ☐ Market bond ☐ Discount bond ☐ Include bond settlements ☐ Exclude client fee

Trade Display: ☐ Show delivered future trades ☐ Show expired listed option trades ☐ Show matured issuance bond trades

☐ Split FX trade ☐ Load trades by asset

Show by position: ☐ FX ☐ Bond/Fut/Lopt/Equity ☒ LOPT: split long and short positions

Collateral ccy: ☒ From Trade ☐ Other

☐ Load and Price **Load**

<input checked="" type="checkbox"/>	Include	TradeType	TradeID	Trade Subtype	Trade Status	Notional	Σ Trade NPV	Start	End	Trader	Book	Company	Desk	NPV	Σ Accrual	Σ Net	Σ
<input checked="" type="checkbox"/>		BOND	0000002328		VER	15,000,000.00		9/1/2016	2/15/2031	DANNY	DEMO	SUMMIT	DESKA	18,583,837.45	33,620.79	18,550,216.66	
<input checked="" type="checkbox"/>		BOND	0000002329		VER	7,000,000.00		9/5/2016	9/30/2021	DANNY	DEMO	SUMMIT	DESKA	6,632,774.40	61,213.46	6,571,560.94	
<input checked="" type="checkbox"/>		FXFWD	0000003242		VER	10,000,000.00		8/31/2016	3/2/2017	DANNY	DEMO	SUMMIT	DESKA	68,725.70		68,725.70	
<input checked="" type="checkbox"/>		FXFWD	0000003243		VER	11,000,000.00		8/31/2016	4/3/2017	DANNY	DEMO	SUMMIT	DESKA	-723,020.77		-723,020.77	
<input checked="" type="checkbox"/>		MM	19753S	ADDON	VER	5,000,000.00		9/2/2016	6/2/2017	DANNY	DEMO	SUMMIT	DESKA	-2,036.71		-2,036.71	
<input checked="" type="checkbox"/>		MM	19754S	ADDON	VER	8,000,000.00		9/2/2016	9/2/2017	DANNY	DEMO	SUMMIT	DESKA				
<input checked="" type="checkbox"/>		MUST	19749S	SN_CDS	VER	10,000,000.00	0.0	9/1/2016	9/20/2021	DANNY	DEMO	SUMMIT	DESKA	-7,393.83		-7,393.83	
<input checked="" type="checkbox"/>		SWAP	19747S	IRSWAP	VER	10,000,000.00		9/2/2016	9/2/2026	MK1	DEMO	SUMMIT	DESKA	67,598.07		67,598.07	
<input checked="" type="checkbox"/>		SWAP	19748S	IRSWAP	VER	12,000,000.00		9/2/2016	9/2/2024	DANNY	DEMO	SUMMIT	DESKA	138,703.51		138,703.51	
<input checked="" type="checkbox"/>		SWAP	19752S	IRSWAP	VER	8,000,000.00		9/2/2016	9/2/2024	DANNY	DEMO	SUMMIT	DESKA	976.79		976.79	
<input checked="" type="checkbox"/>		SWOPT	19751S		VER	10,000,000.00		8/31/2016	8/31/2018	DANNY	DEMO	SUMMIT	DESKA	10,210.46		10,210.46	

# TRADING BOARD

Trading Board - 11 trades : STANDARD \*

[TB 4]

☒ Combined filter

>>

☒ Sync/Recalc: reload filter/trades

8/31/2016

FRTB

PGID

FRTB

Shift:

IR

BP

Vol

BP

<input checked="" type="checkbox"/>	Price	<input checked="" type="checkbox"/> Risk	Trade Type	Trade Subtype	Trade Id	Trade NPV	Σ	Trade NPV Ccy	Notional	Σ	Notional Ccy	Start Date	Maturity Date	Customer	Marketer	Book	Desk
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWAP	IRSWAP	19747S	74,885.39		USD	10,000,000.00		USD	9/2/2016	9/2/2026	JPM	MK1	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWAP	IRSWAP	19748S	153,656.28		USD	12,000,000.00		USD	9/2/2016	9/2/2024	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWAP	IRSWAP	19752S	976.79		EUR	8,000,000.00		EUR	9/2/2016	9/2/2024	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SWOPT		19751S	10,210.46		EUR	10,000,000.00		EUR	9/4/2018	9/4/2023	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BOND		0000002328	27,699,484.65			15,000,000.00		USD		9/1/2016	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BOND		0000002329	7,613,253.18			7,000,000.00		USD		9/5/2016	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MM	ADDON	19753S	-2,256.27		USD	5,000,000.00		USD	9/2/2016	6/2/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MM	ADDON	19754S			EUR	8,000,000.00		EUR	9/2/2016	9/2/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FXFWD		0000003242	76,134.59		USD	10,000,000.00		EUR	9/2/2016	3/2/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FXFWD		0000003243	-10,125.04		USD	-8,326,633.23		GBP	9/2/2016	4/3/2017	JPM	NICOLA	DEMO	DESKA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MUST	SN_CDS	19749S	-7,393.83		EUR	10,000,000.00		EUR			JPM	NICOLA	DEMO	DESKA

# MARKET RISK

Market Risk Analysis : STANDARD

Parameters

Date: 8/31/2016 Filter: FINASTRA >> Load

Curve ID: FRTB PG ID: FRTB

Parameters

- Global Hedge Parameters
- Risks**

Hedge params ID:  Tree config ID:

Hedge config ID:

Ccy/Index	Group Num	Σ	Shift Type	Delta Shift	Σ	Shift Form
IR /EUR/EONIA	10	PER		1.0	BP	
IR /EUR/EUR3M	10	PER		1.0	BP	
IR /EUR/USD	10	PER		1.0	BP	
IR /GBP/GBP3M	20	PER		1.0	BP	
IR /GBP/USD	20	PER		1.0	BP	
IR /GBP/SONIA	20	PER		1.0	BP	
IR /USD/FED	30	PER		1.0	BP	
IR /USD/LIB3M	30	PER		1.0	BP	
IR /USD/LIBOR	30	PER		1.0	BP	
IR /USD/OIS	30	PER		1.0	BP	
IR /USD/TREAS	30	PER		1.0	BP	
FX /EUR/USD	40	PER		1.0	BP	
FX /GBP/USD	50	PER		1.0	BP	
SWVOL/EUR/EU	60	PER		100.0	BP	
FDSPR/T5.375_F	70	PER		1.0	BP	
FDSPR/NIB_2.25	70	PER		1.0	BP	
CERR /LVY SN	80	PER		-100.0	BP	
CESDP/LVY SN	90	PER		1.0	BP	

# MARKET RISK CONT

## Parameters

### Global Hedge Parameters

#### Risks

- IR /EUR/EONIA
- IR /EUR/EUR3M
- IR /EUR/XUSD
- IR /GBP/GBP3M
- IR /GBP/XUSD
- IR /GBP/SONIA**
- IR /USD/FED
- IR /USD/LIB3M
- IR /USD/LIBOR
- IR /USD/OIS
- IR /USD/TREAS
- FX /EUR/USD
- FX /GBP/USD
- SWVOL/EUR/EUR3M/LOGNORM
- FDSPR/T5.375\_FEB31
- FDSPR/NIB\_2.25\_30SEP21
- CERR /LVY SNRFOR EUR
- CESDP /LVY SNRFOR EUR

Type	IR	Ccy/Index	GBP/SONIA	Hedge config	Exploded	N				
Issuer										
<b>Delta</b>										
Mode	PER	Delta Shift	1.0	Shift format	BP	Term	SUN			
Risk group	20	Forex shift		Domain		DRule				
Hedge group		Shift group		AIC Expr		Basis				
Ref ccy	GBP	Ref index	GBP3M	Sec Id		Scale delta shift	N			
Gamma ladder	N	Two side delta	N	Regen Spread	Y	Scaling factor	1.00			
							Vol Scaling	N		
<b>Gamma Ladder</b>										
Gamma ladder shifts										
Gamma shift group									Gamma shift	Shift format
<b>Gamma</b>										
<input type="checkbox"/> Copy Hedge Config										
Mode	PER	Gamma shift	1.0	Shift format	BP	Term	SUN			
Risk group	20	Gamma shift group		Domain		DRule				
Hedge group		Gamma shift type	FWD	AIC Expr		Basis				
		Cross Gamma	N	Scale delta shift	N	Scaling factor	1.00			

# MARKET DATA AND CURVE IDS

Curve Ids are used to have multiple sets of market data

IR - USD LIB3M 8/31/2016 FRTB : STANDARD

[Last update timestamp]  
 Shift: Parallel/Segment/Basis Point/1.0  
 Parameters: Splined Par Rates/Linear Interp  
 Money Market

Date	Rate	Spread
1D	0.27789	
2D	0.21202	
1W	0.24952	
2W	0.22165	
1M	0.26224	
2M	0.34623	
3M	0.47473	

Interest Rate Curve Definition - FRTB / USD / LIB3M / 8/31/2016 : STANDARD

Window Interest Rate Curve Definition Action Help  
 App Config

Identifier  
 Currency USD Index LIB3M Date 8/31/2016 ID FRTB

Definition  
 Reference ccy Reference index Yield basis spread Asset ID  
 Pillars ID FX quote method

Details

Market Type	Term	Base	Contract	Asset ID	Aux Asset ID	Pillars
MM		A360				N
FUT			FUS3ML			N
EAC	1Y			AIC3MUSD	FLT3MUSD	N

Extended All In Cost

Date	Rate
1Y	0.38372
2Y	0.61888
3Y	1.19552
5Y	2.19018
7Y	2.54476
10Y	2.88368
12Y	2.77264
15Y	2.39895
20Y	2.52024
25Y	2.34526
30Y	2.55799

IR - USD LIB3M 8/31/2016 RISK : STANDARD

[Last update timestamp]  
 Shift: Parallel/Segment/Basis Point/1.0  
 Parameters: Raw/Linear Interp  
 Zero Rate

Date	Rate	Spread
1D	0.4747	
2D	0.42	
7D	0.5316	
14D	0.7066	
1M	0.8476	
2M	1.001	
3M	1.0456	
6M		Right-click to Insert Row
9M	1.0713	
12M	1.075	
24M	1.0788	
36M	1.083	
48M	1.0886	
60M	1.0953	
72M	1.1042	
84M	1.1155	
96M	1.2254	
108M	1.3328	
120M	1.4628	

Interest Rate Curve Definition - RISK / USD / LIB3M / 8/31/2016 : STANDARD

Window Interest Rate Curve Definition Action Help  
 App Config

Identifier  
 Currency USD Index LIB3M Date 8/31/2016 ID RISK

Definition  
 Reference ccy Reference index Yield basis spread Asset ID  
 Pillars ID FX quote method

Details

Market Type	Term	Base	Contract	Asset ID	Aux Asset ID	Pillars
ZERO		A360				A

3 dte US

1/2 16 FRTB : STANDARD

/Basis Point/1.0

# MARKET DATA IMPORT

Curve Ids are used to have multiple sets of market data

- Multitude of ways to import market data in production
  - Bloomberg real-time
  - Reuters real-time
  - APIs for internal data feeds – common in larger institutions
  - Snapshot mode

Good for production  
Needs daily runs

- Text file imports
  - Easy and very flexible to do
  - Requires mapping of data into text files
  - Mktime.exe takes text file as input, validates data roughly, loads data and builds curve
    - Zero curve stored in DB. No need to rebuild for HVaR
    - You can run from Summit FT or better from command line (source environment from cmd line)
    - Running scripts is almost always more efficient than using User Interfaces
  - Supports AsOf, CurveId and any market data
  - Cmd: mktime.exe -h provides all command line options



fx\_mktData.txt



import.mkt.small.txt

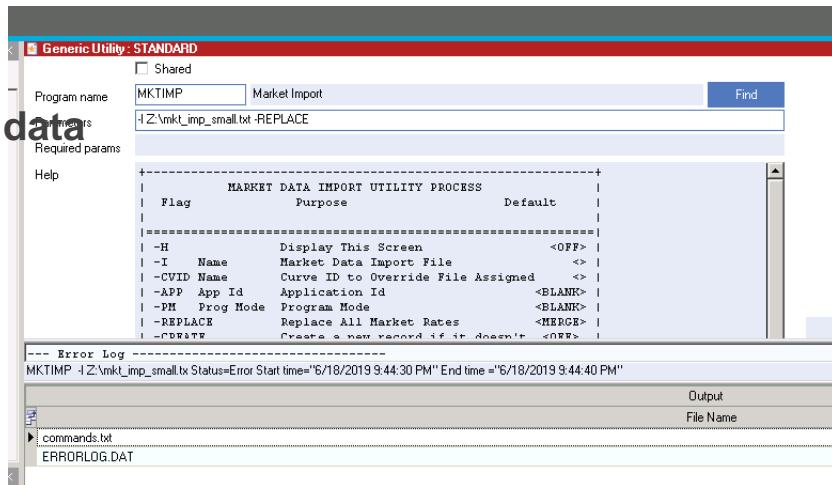
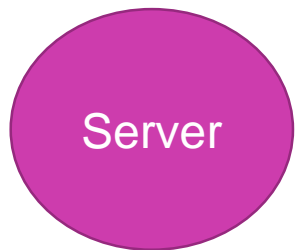


import.mkt.txt

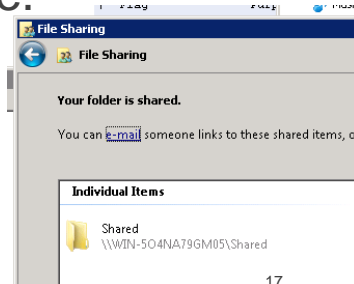


# MARKET DATA IMPORT (CONT)

Curve Ids are used to have multiple sets of market data

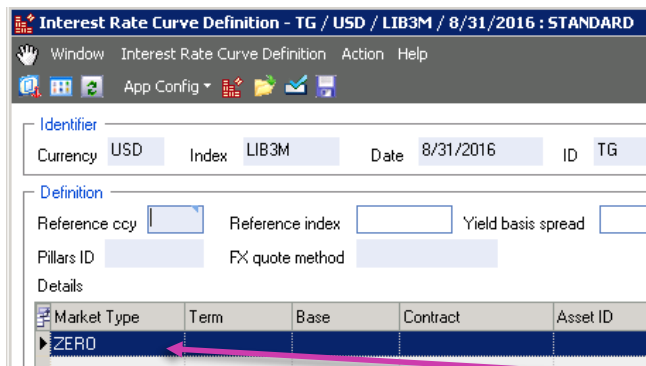
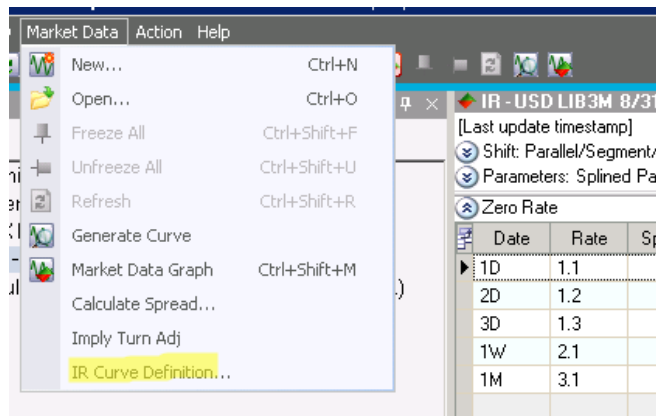


- We are working on letting you run on cmd line on client
- Until this is ready run mktimp.exe and hvarexec.exe from Fusion Summit
- Fusion Summit runs on server so all files need to be on server
- Client publishes C:\Shared. Server mounts Client folder to Z: drive.
  - So, add files to C:\Shared and reference Z: in command line



# MARKET DATA IMPORT (CONT)

- When importing Rates the IR Curve Definition needs to match the text file data

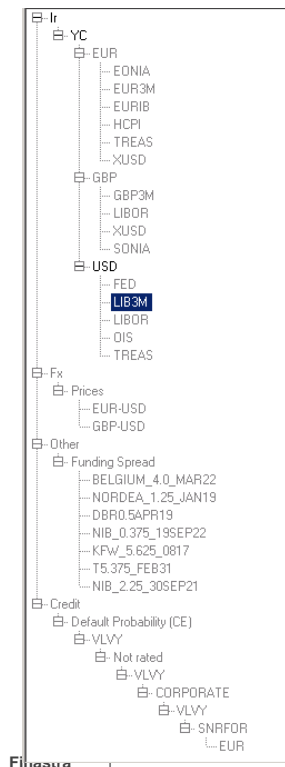


CCY	USD	
INDEX	LIB3M	
DATE	31/8/2016	
ID	TG	
#	Money	Market segment
USD	LIB3M	ZERO
1D	1.1	
2D	1.2	
3D	1.3	
1W	2.1	
1M	3.1	

# FRTB SETUP

## Real-time Risk Server Calculates Specific Risk Exposures

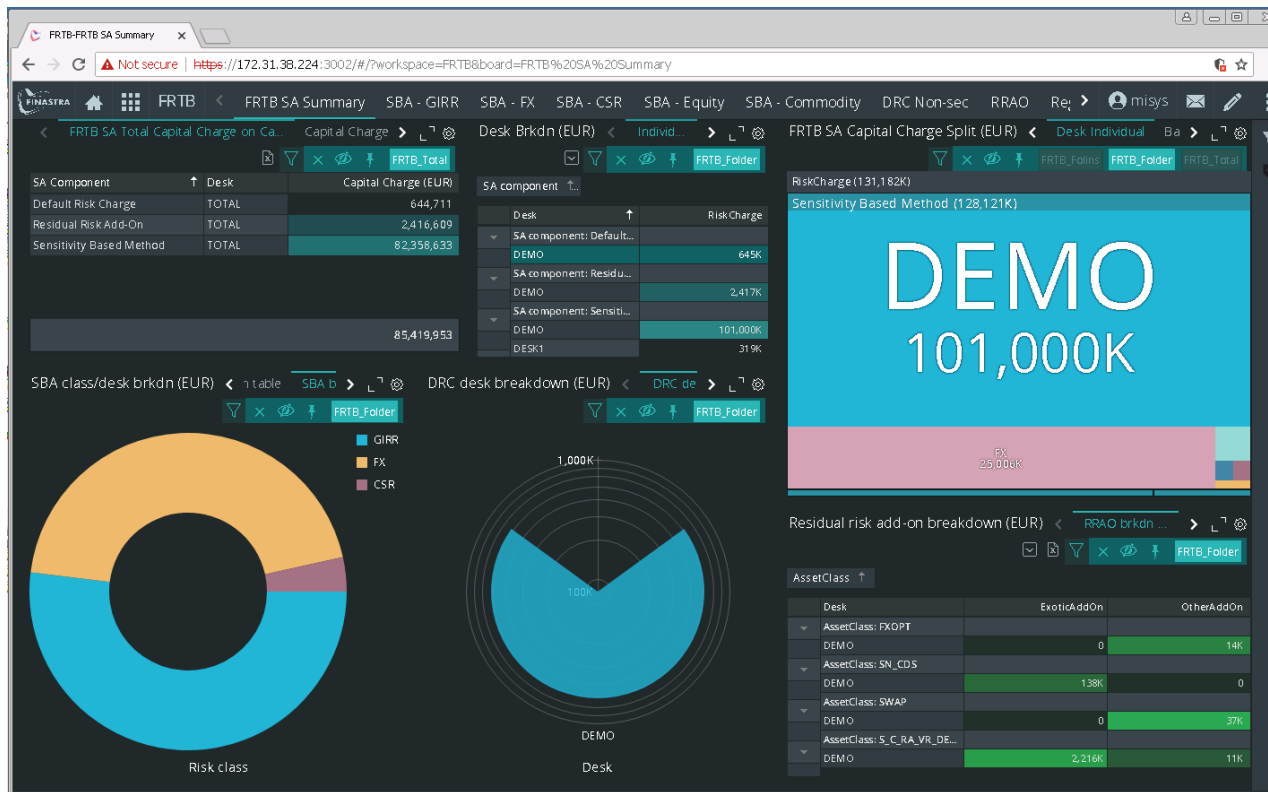
More Details later in class



Term	Rate	USD	Σ	BPV	Σ	REQUIRED	Σ
3M	0.85293		-32.88	-24.88		-1.32	
6M	1.11026			-49.32			
1Y	0.38003	5,998.74	-99.62			60.21	
2Y	0.61536		66.47	-197.53		0.33	
3Y	1.19752			-289.12			
5Y	2.20663			-447.87			
10Y	2.91141			-747.33			
15Y	2.30133			-1,061.45			
20Y	2.48623			-1,215.44			
30Y	2.59663			-1,374.74			
TOTAL			6,032.34				

# FRTB AGGREGATOR

## Real-time Risk Server Feeds FRTB Aggregator



# PUTTING IT ALL TOGETHER

1. Trades to enter
2. Market data setup
3. Filter Setup
4. Market Risk Analysis Configuration
5. Market Risk Run
6. FRTB Aggregator
7. UXP Tool to Display Data

# MM TRADE EXAMPLE

## Results for one Money Market trade

## Filter and Trading board

Filter Definition - FRTB IMM - STANDARD

Filter ID: FRTB\_IMM Version: 2 State: LIVE

Definition

Description:

Multiple filter names:

Trade types

☐ Swap ☐ Cap/Floor ☐ Fia ☐ Swaption ☐ Exotic ☐ Bond ☒ Money market

☐ Repos ☐ FX spot ☐ FX swap ☐ FX forward ☐ FX option ☐ Trade accounts ☐ Bond option

☐ Bond basket ☐ Bond spread ☐ Futures ☐ Listed options ☐ Deal payments ☐ Stock trades ☐ Equity options

☐ Must ☐ External trade Strategy def method:

Select All Unselect All

Trade | Product | Back Office | Instruments | Extension | Filter Info

Status: VER Trade ID: 19668S Hedge ID:

Structure flag:  Structure ID:  Is mirror:

P or S:  Put/Call:  Breakable:

Option owner:  Is Quanto:  Exercised/Expiry:

Date

From:  Input:  Trade:  Trade entry:  Started:  Amended:  Matured:  Expiry:  Delivery:  Exercised/Expiry:

To:

Amount

Notional:  Strike:

Greater than:

Smaller than:

Allocation

Is P&L trade:  Is street trade:  Allocation trade type:

Trading Board - 1 trade - STANDARD

(TB 1)

☒ Combined filter  ☒ Sync/Recalc: reload filter/trades 8/31/2016 FRTB PGID FRTB

Shift: IR BP Vol BP

Filter	Risk	Trade Type	Trade Subtype	Trade ID	Trade NPV	Trade NPV Ccy	Notional	Notional Ccy	Start Date	Maturity Date	Customer	Marketer	Book
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MM	ADDON	19668S	0.01	EUR	3,000,000.00	EUR	9/2/2016	11/2/2016	JPM	NICOLA	DEMO

Trade Finder : STANDARD

Filter name: FRTB\_IMM Reload Filter Save As Filter Current Filter: FRTB\_IMM

Find Advanced

Trade types: MM External system:

Trade ID: 19668S Trade status: VER

Customer:  Trader:

Legal Entity Id:  Legal Entity:

Company:  Trade: FromDate:

Book:  Trade: ToDate:

Desk:  Is P&L Trade:

Portfolio:  Is Street Trade:

External trade ID:

Find Now New Search Setup...

OK Cancel Apply

# MM TRADE EXAMPLE CONT.

## Results for one Money Market trade

To check sensitivities you can run MRM or Trading board.

**Market Risk Analysis - STANDARD**

Parameters

Date: 8/31/2016 Filter: FRTB\_1MM Load

Curve ID: FRTB PG ID: FRTB

Parameters

- Global Hedge Parameters
- Risks

Hedge params ID: HP\_NOVOL\_D Tree config ID:

Hedge config ID: HC\_NOVOL\_D

Ccy/Index	Group Num	Shift Type	Delta Shift	Shift Format	Hedge
IR /EUR/EONIA	10	PER	1.0	BP	

**Market Risk Analysis - STANDARD**

Parameters

Date: 8/31/2016 Filter: FRTB\_1MM

Curve ID: FRTB PG ID: FRTB

**MRM - IR /EUR/EONIA - ACTIVE : STANDARD**

for Risk: IR /EUR/EONIA:

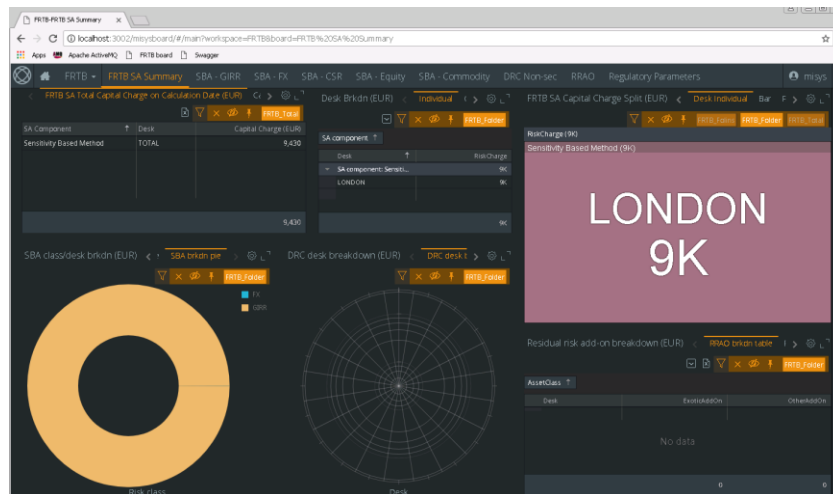
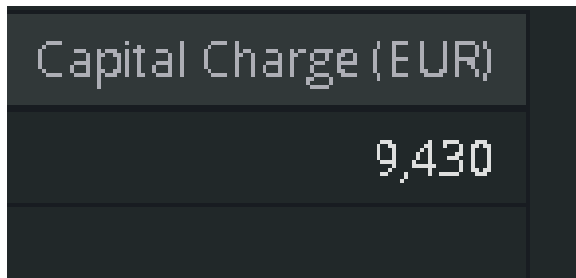
Term	Rate	EUR	USD(1.078)	BPV	REQUIRED
3M	-0.2956	50.14	55.54	-24.95	2.01
6M	-0.2699			-49.65	
1Y	-0.2291			-100.22	
2Y	-0.1831			-200.71	
3Y	-0.1524			-301.05	

Filter ID	Hedge Parameters ID
FINASTRANOXV	HP_NOVOL_D
FINASTRA_V	HP_VOL_D
FINASTRA_V	HP_VOL_VCV
FINASTRA_X	HP_NOVOL_D
FINASTRA_X	HP_NOVOL_X
FRTB_1FWD	HP_NOVOL_D
FRTB_1MM	HP_NOVOL_D
FRTB_1SPOT	HP_NOVOL_D
FRTB_1SWAP	HP_NOVOL_D
FRTB_4DESKS	HP_NOVOL_D
FRTB_FXD	HP_FXD_CV
FRTB_FXD	HP_FXD_DV
FRTB_FXD	HP_FXD_X
FRTB_NOVOL	HP_NOVOL_D
FRTB_NOVOL_X	HP_NOVOL_D
FRTB_NOVOL_X	HP_NOVOL_X
FRTB_VOL	HP_VOL_D
FRTB_VOL	HP_VOL_VCV

# MM TRADE EXAMPLE CONT.

Results for one Money Market trade

FRTB Aggregator listens to folder and pushes data to UXP





## ADDITIONAL NOTES

- A few points about the development environment
  - Teams share data setups in FRTB UXP. So, each team should create a new workspace that is owned by the team. The FRTB workspace is for reference only
    - Naming convention for new workspace is 'Team<#>'. So, team 3 will have workspace Team3.
  - Breakdown of FRTB charge is
    - Company
    - Desk (also called Folder)
    - Desk/TradeType