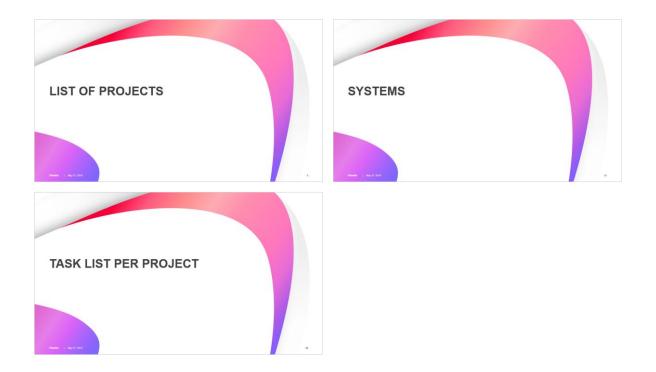# FRTB CAPSTONE COURSE 2019

Projects

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LIST OF PROJECTS

SYSTEMS

TASK LIST PER PROJECT

LIST OF PROJECTS

PROJECTS

In Sequence. 1-5 confirmed. 6-9 TBD

FINASTRA

Index	Project	Complexity	Effort
1	**Perform QIS on multiple portfolios:** **1) Basel II SA, 2) Basel II IM, 3) FRTB SA, 4) FRTB IMA**	**3 - High**	**3 - High**
2	**Identify portfolio feature that have the biggest impact between FRTB SA and IMA charges**	**3 - High**	**3 - High**
3	**Identify portfolio/risk feature that have the biggest impact between Basel II and FRTB SA/IMA charges**	**3 - High**	**3 - High**
4	**Investigate the advantages and disadvantages to use zero rate sensivities versus curve instrument sensivities to calculate FRTB SA**	**2 - Medium**	**2 - Medium**
5	**Impact study on FRTB SA Charge based on different curve generation methodologies**	**2 - Medium**	**2 - Medium**
6	**Implement FRTB IMA DRC Charge**	**4 – Very High**	**4 – Very High**
7	**Performa additional analytics – 5) SIMM, 6) Explanatory P&L**	**3 - High**	**3 - High**
8	**Smooth Forward Curve generation**	**4 – Very High**	**3 - High**
9	**Build a pre-deal application that calculates using Exchange APIs (CME&LCH) the Initial Margin (IM) charge for a new trade. Optimize the charge.**	**3 - High**	**3 - High**

STUDENTS

Please correct if anything incorrect or you are missing

Ci Song
Demetra Koumatos
Hanyun Zhang
Jialun Luo
Jiayue Xing
Jinzhou Yao
Kai Lyu
Wenhao Zhao
Tian Yang
Wenqi Hua
Xiangyu Meng
Xiaojun Guo
Xiaoxiang Shan
Yating Wang
Yu Dai
Yu Lin
Zeqi Ton
Zheng Tang
Ziyuan Zhao
Yu Jin

PROJECT DESCRIPTION

❖ Main Project: QIS comparing Basel II, FRTB SA and FRTB IMA

  ❖ System As of date: Dec 27, 2018
  ❖ Multiple small portfolios and one consolidated portfolio

PORTFOLIOS

1. Multiple portfolios will be generated to analyze the impact
   a) USD/EUR; 10,000,000; 1M Fwd
   b) USD/EUR; 10,000,000; 2M Fwd
   c) USD/EUR; 10,000,000; 3M Fwd
   d) USD LIB3M Swap, 5Y; 10,000,000
   e) USD LIB1M Swap, 5Y; 10,000,000
   f) USD LIB3M Swaption with same Delta as 4)
   g) Pay Fixed Swap Collateralized; Receive Fixed Swap Uncollateralized; 10,000,000, 7Y

2. If time permits
   a) Call Spread from previous year (see attachment)
   b) Bank portfolio subset
   c) Portfolio from 2018

SOON WE SHOULD DECIDE

Which team picks which project

Good to have two teams per project

We will work and amend as we go

We are working on setting up the environments. Still TBD of when it will be done

Do we have C/C++ developers in the teams?

We'll have lectures and lots of hands-on work. For hands-on work we are planning to have bi-weekly 1h meetings where teams present status.

PORTFOLIO HIERARCHIES

Each team has a set of DESKs. Naming convention:

DESK<TEAM#><ALPHANUMERIC>

Example: DESK1A, DESK1B, DESK1C…., DESK2A, DESK2B

Capital Charges are always calculated on Desk level. So, you cannot combine two desks

Deals cannot be deleted but you can cancel deals. Deals are in PEND, DONE, VER, CANC states.

Filters define a set of trades. Use the following naming convention:

TEAM<#> for all your desks and then TEAM<#>A, TEAM<#>B ….

HIGH LEVEL TIMELINE

Date	Topic	Deliverable
June 2019	• Systems setup • Learn regulation, algorithms and systems • Data loads • Initial runs for projects completed	Teams have portfolios loaded and results for SA, IMA, SIMM, P&L Explain run (precise scope to be defined)
July 2019	• In depths execution of research projects	
August 2019	• Further work on projects • Prepare final presentation • Public Event	

DETAILED TIMELINE

FINASTRA

Date	Topic	Objective	Homework	HW Due Date
Friday 5/23/19	• Intro	• Intro to course and get to know each other	• Read FRTB Regulation	• TBD
Tuesday 5/28/19	• FRTB Overview	• Introduction to FRTB. Supplements the HW	• Present Algorithm and Summary of FRTB	• Friday, 5/31/19
Friday 5/31/19	• Students present • Summit Overview	• Students to present their understanding of FRTB • Fusion Summit demo		

SYSTEMS

All Communication in lectures, in person and on Slack

fordham-frtb-2019.slack.com

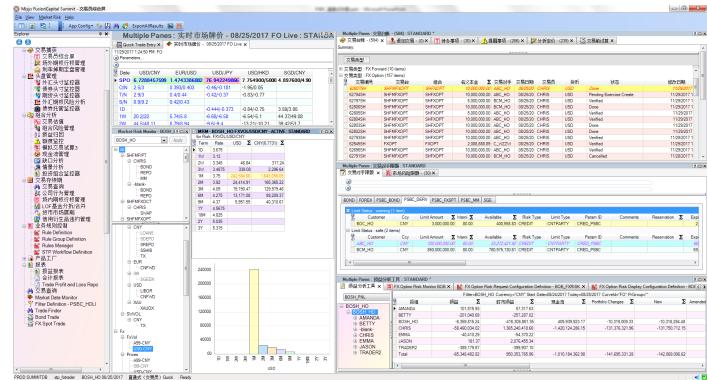**We'll try and limit emails**

TRADING SYSTEM

USER DESKTOP

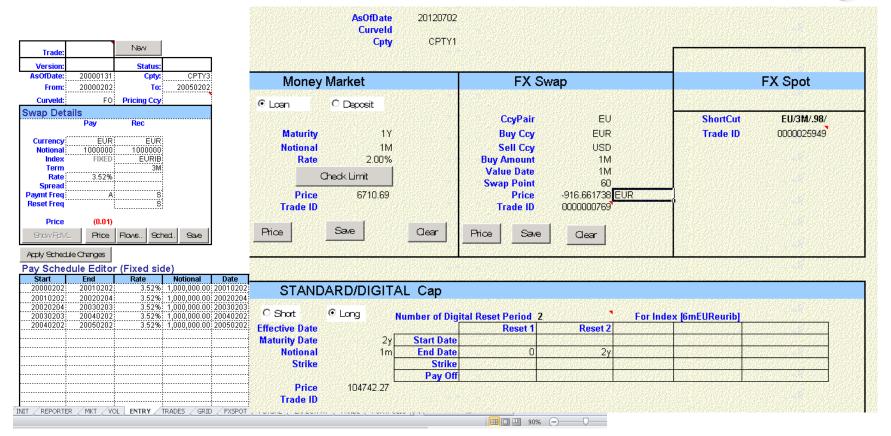## User friendly trade management desktop and pro-active alert for trading decision

- User definable desktop

- Support trading decision – pre-trade simulation

- Realtime position, limit and PnL

- Fully integrated with Excel

› **Own your trading dashboards**

› **Access what you need, when you need it**

› **Comprehensive snapshot of positions, curves**
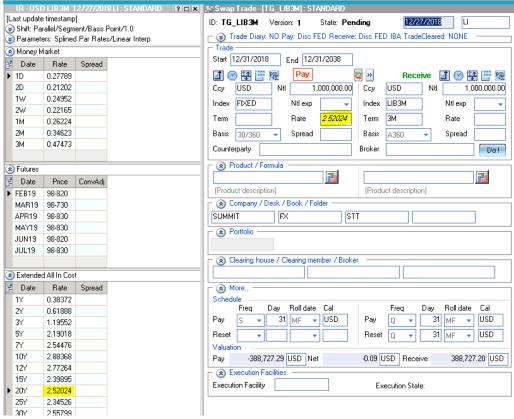
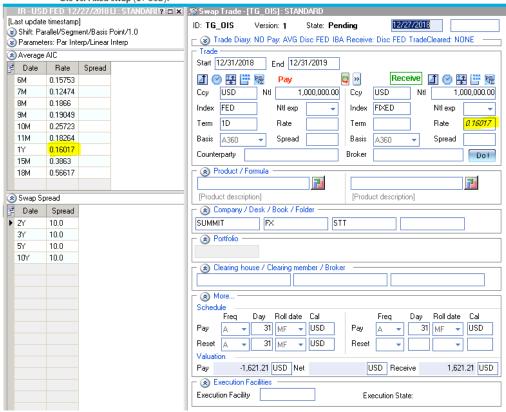# FULL BI-DIRECTIONAL EXCEL INTEGRATION

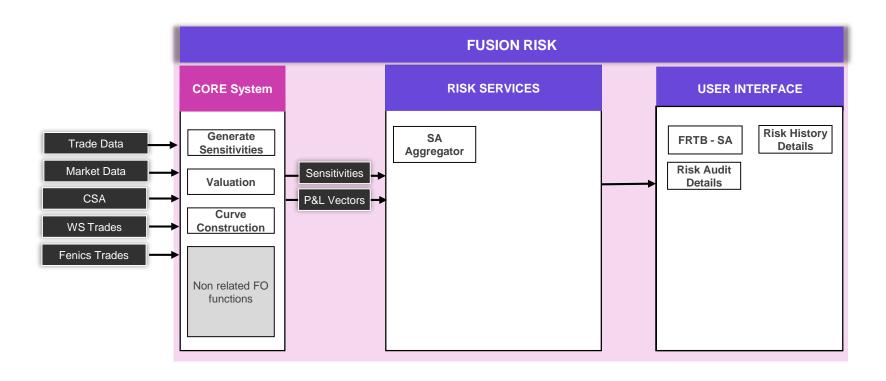# USD LIB3M

• **LIB3M vs. Fixed swap** (20Y USD):

USD OIS

COMPONENTS / MICROSERVICES

SA ARCHITECTURE
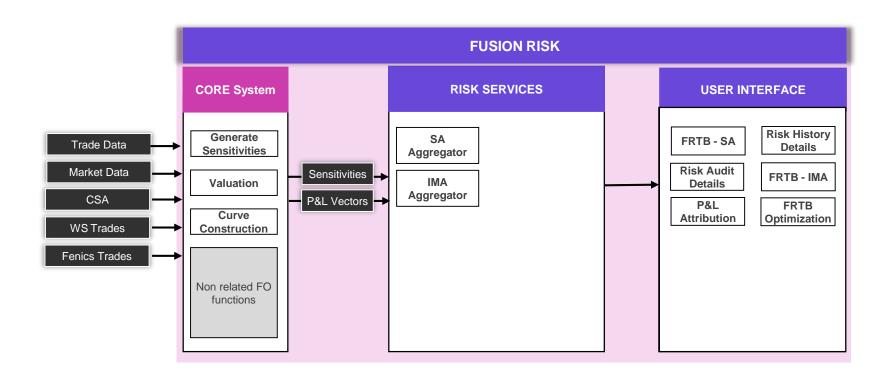
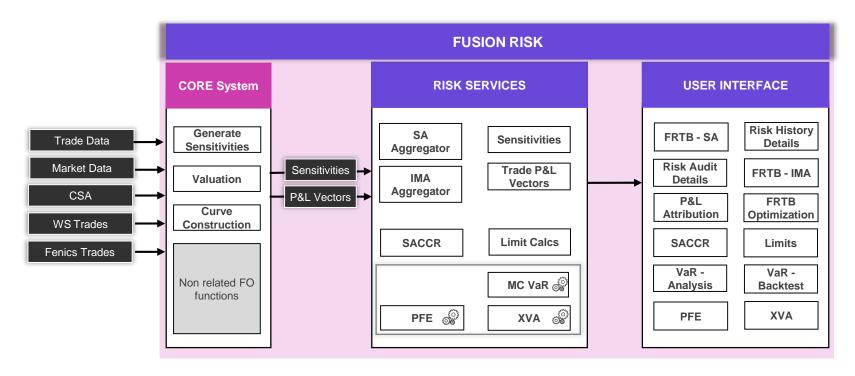**Finastra takes trades from all core systems and calculates valuations and sensitivities**

FINASTRA

FUSION RISK

CORE System

- Trade Data
- Market Data
- CSA
- WS Trades
- Fenics Trades

| Generate Sensitivities |
| Valuation |
| Curve Construction |
| Non related FO functions |

Sensitivities

P&L Vectors

RISK SERVICES

SA Aggregator

USER INTERFACE

FRTB - SA

Risk History Details

Risk Audit Details

IMA ARCHITECTURE

Finastra calculates IMA numbers

FINASTRA

FUSION RISK

CORE System	RISK SERVICES	USER INTERFACE

CORE System

- Generate Sensitivities
- Valuation
- Curve Construction
- Non related FO functions

Trade Data
Market Data
CSA
WS Trades
Fenics Trades

Sensitivities
P&L Vectors

RISK SERVICES

- SA Aggregator
- IMA Aggregator

USER INTERFACE

- FRTB - SA
- Risk History Details
- Risk Audit Details
- FRTB - IMA
- P&L Attribution
- FRTB Optimization

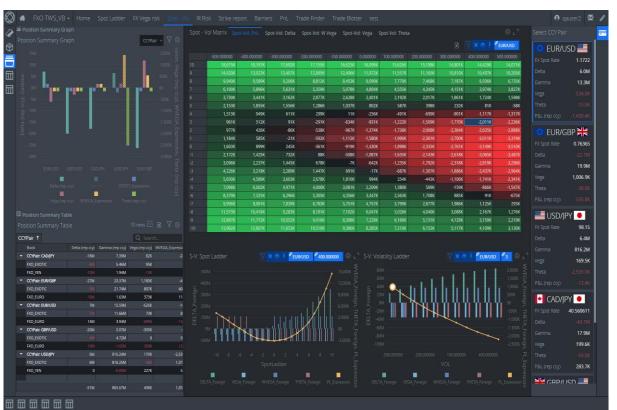# END STATE FOR TREASURY AND GLOBAL MARKETS RISK

Finastra proposed end state solution enables the target integrated global markets risk platform
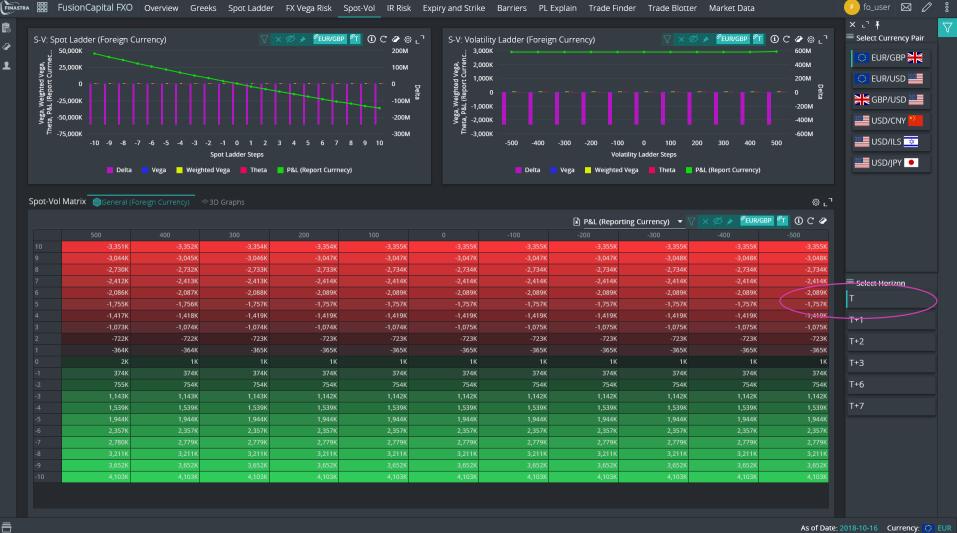
INNOVATIVE UXP

OUR ANSWER TO TRADING AND RISK MANAGEMENT CHALLENGES
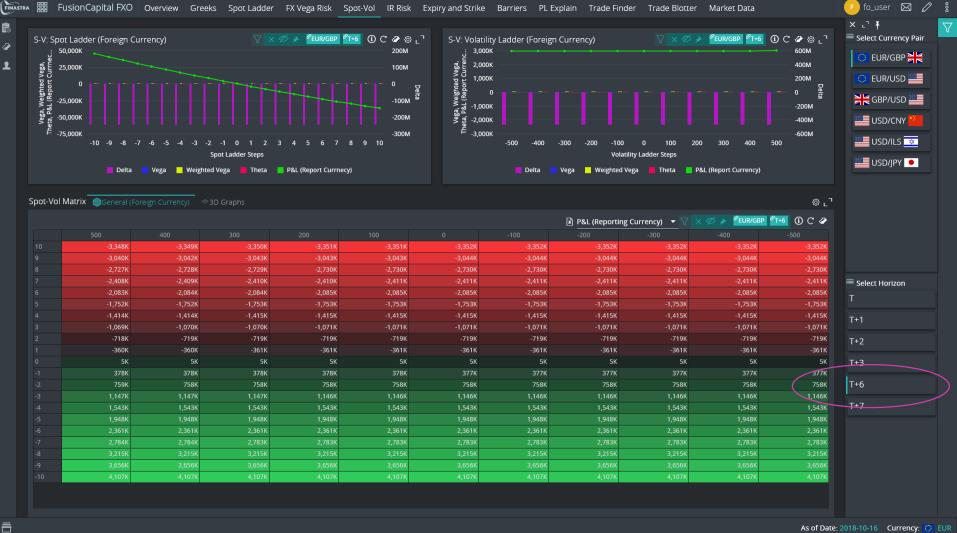## RISK MANAGEMENT WORKSTATIONS

- ➢ FXO Risk workstation developed on Fusion Core

- ➢ Out-of-the-box boards to meet requirements of sophisticated FXO trader, Desk level Risk and Enterprise Risk

- ➢ Perform all daily and ad-hoc risk tasks from trade investigation to Risk and P&L management

- ➢ Real-time for trades and periodic execution of analytics for market data changes

- ➢ New in-memory cubing technology for fast slice/dice, on-the-fly reaggregation
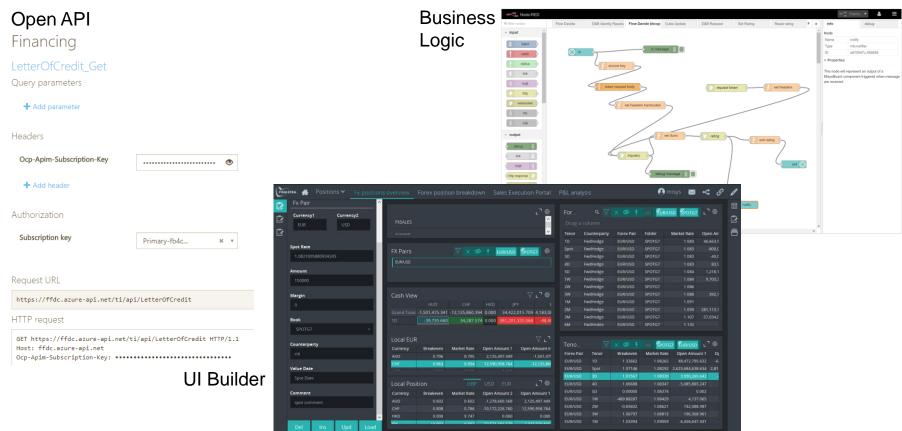
FUSION CREATOR – APP BUILDER

Open API

Business Logic

UI Builder

TASK LIST PER PROJECT

PROJECT 1

Perform QIS on multiple portfolios:

1) Basel II SA, 2) Basel II IM, 3) FRTB SA, 4) FRTB IMA

- Define Portfolio

- Define Market Data

- Define Pricing Models

- Learn FRTB SA Specific Hedge Setups

- Run SA Analysis

- Load Historical Market Data for IMA

- Run IMA Analysis assuming P&L ok

- Present all Findings