ARMS FRTB Suite

THE CHALLENGES OF FRTB

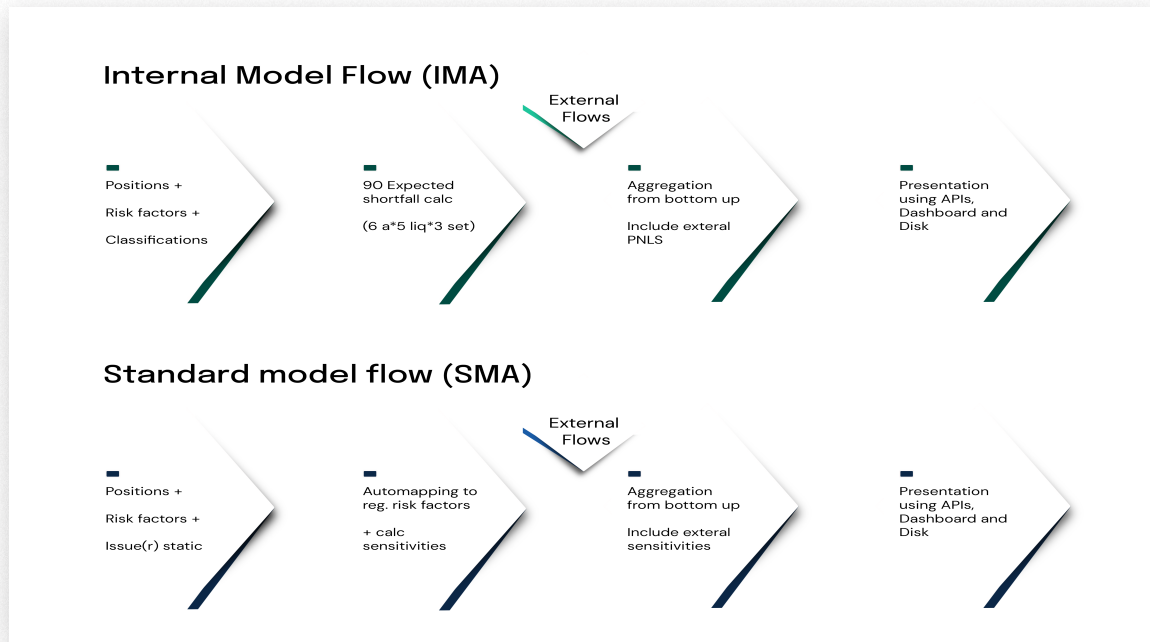| Capital Charges | Need to optimize trading desk structures in order to minimizecapital costs |
Architecture	IMA approval requires FO/MO alignment of models and market data
Technical	Significantly increased performance requirements
Market Data	Need for extended risk factor sets and careful quality assessments
Operational	New tools needed to perform new processes
Implementation	Must adhere to aggressive Basel III timeline

FRTB OVERVIEW

New standard market risk model

- Sensitivity based risk model more in-line with actual risk taking
- May be required to import sensitivities from PnL generating system
- Non-linear netting of risks in buckets and between buckets (incl stressed correlations)
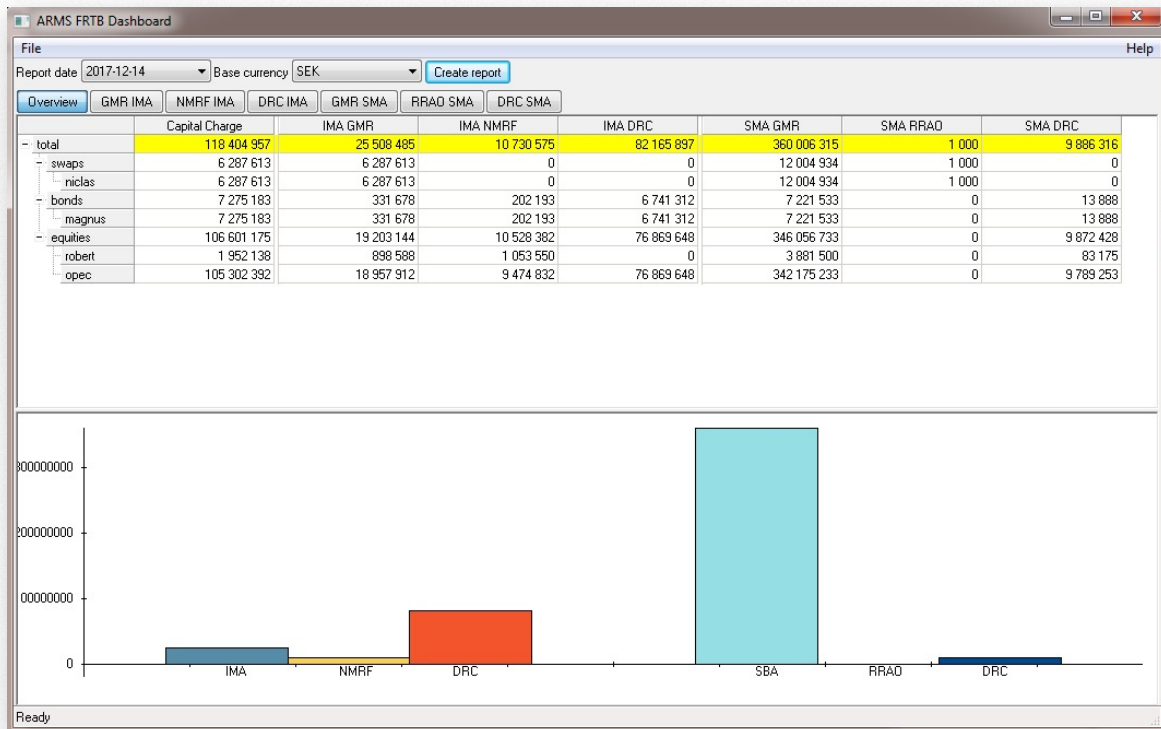- All banks required to report to regulator on monthly basis

New requirements on internal market risk model

- Riskmodel must be expected shortfall
- Calculation based on full and reduced risk factor set and stressed period
- PnL explained to a certain level
- VaR backtesting requirements
- Special handling of non-modellable riskfactors
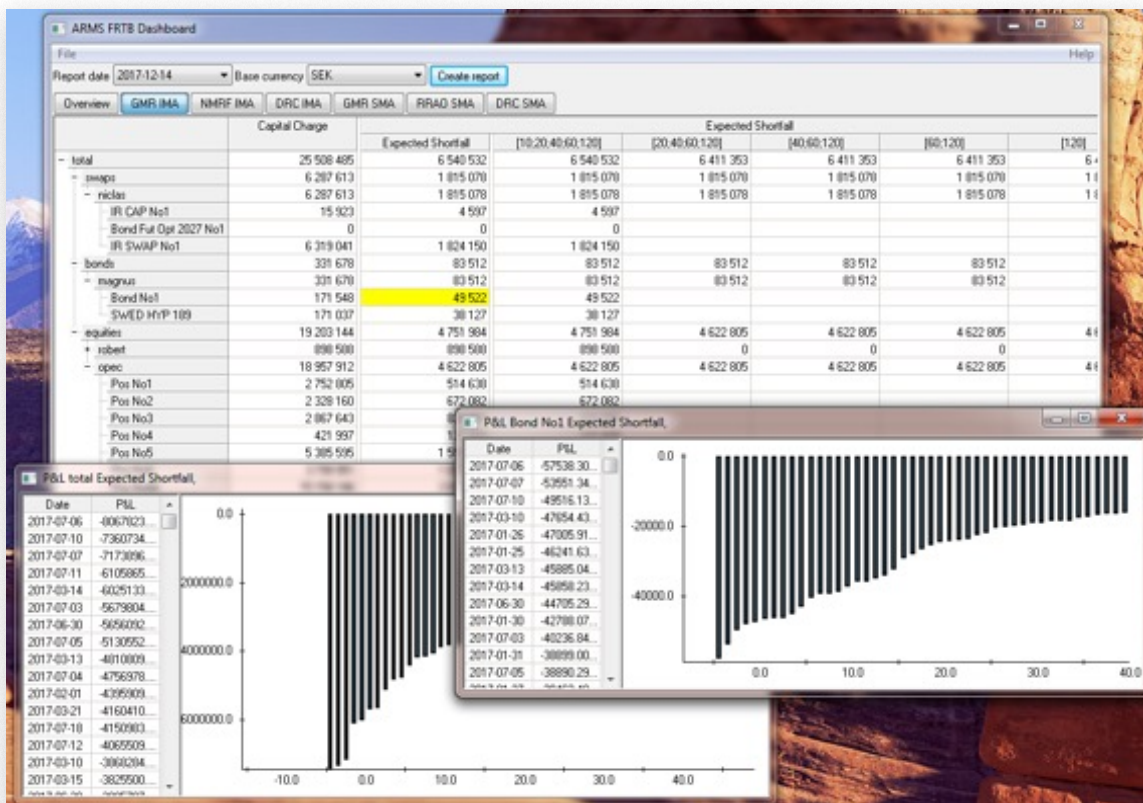- Requirement to use Default Risk Model
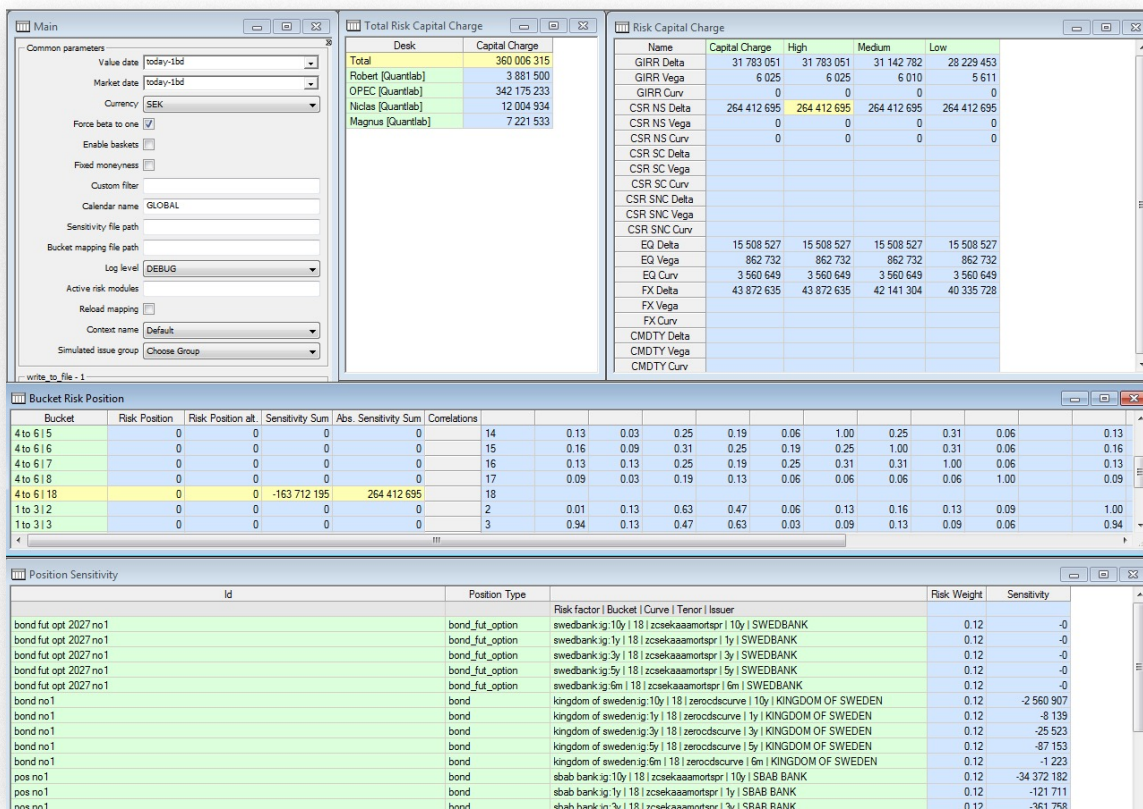
ARMS FRTB PROCESS FLOW

Internal Model Flow (IMA)

External Flows

| Positions +
Risk factors +
Classifications | 90 Expected shortfall calc
(6 a*5 liq*3 set) | Aggregation from bottom up
Include exteral PNLS | Presentation using APIs, Dashboard and Disk |

Standard model flow (SMA)

External Flows

| Positions +
Risk factors +
Issue(r) static | Automapping to reg. risk factors
+ calc sensitivities | Aggregation from bottom up
Include exteral sensitivities | Presentation using APIs, Dashboard and Disk |

ARMS FRTB DESK DASHBOARD

ARMS FRTB Dashboard

File Help

Report date 2017-12-14 Base currency SEK Create report

Overview | GMR IMA | NMRF IMA | DRC IMA | GMR SMA | RRAO SMA | DRC SMA

	Capital Charge	IMA GMR	IMA NMRF	IMA DRC	SMA GMR	SMA RRAO	SMA DRC
total	118 404 957	25 508 485	10 730 575	82 165 897	360 006 315	1 000	9 886 316
swaps	6 287 613	6 287 613	0	0	12 004 934	1 000	0
niclas	6 287 613	6 287 613	0	0	12 004 934	1 000	0
bonds	7 275 183	331 678	202 193	6 741 312	7 221 533	0	13 888
magnus	7 275 183	331 678	202 193	6 741 312	7 221 533	0	13 888
equities	106 601 175	19 203 144	10 528 382	76 869 648	346 056 733	0	9 872 428
robert	1 952 138	898 588	1 053 550	0	3 881 500	0	83 175
opec	105 302 392	18 957 912	9 474 832	76 869 648	342 175 233	0	9 789 253

Ready

ARMS FRTB DESK DASHBOARD cont.

ARMS FRTB – SIMULATE AND EXPLAIN

ARMS SOLUTION – KEY BENEFITS

Simple and unified position and data model

- FRTB standard model capital charge (using full reval)
- FRTB internal model charge (using full reval)

Optional:

- Internal risk such as trading VaR, Stresstesting etc
- Counterparty credit risk – PFE and CVA
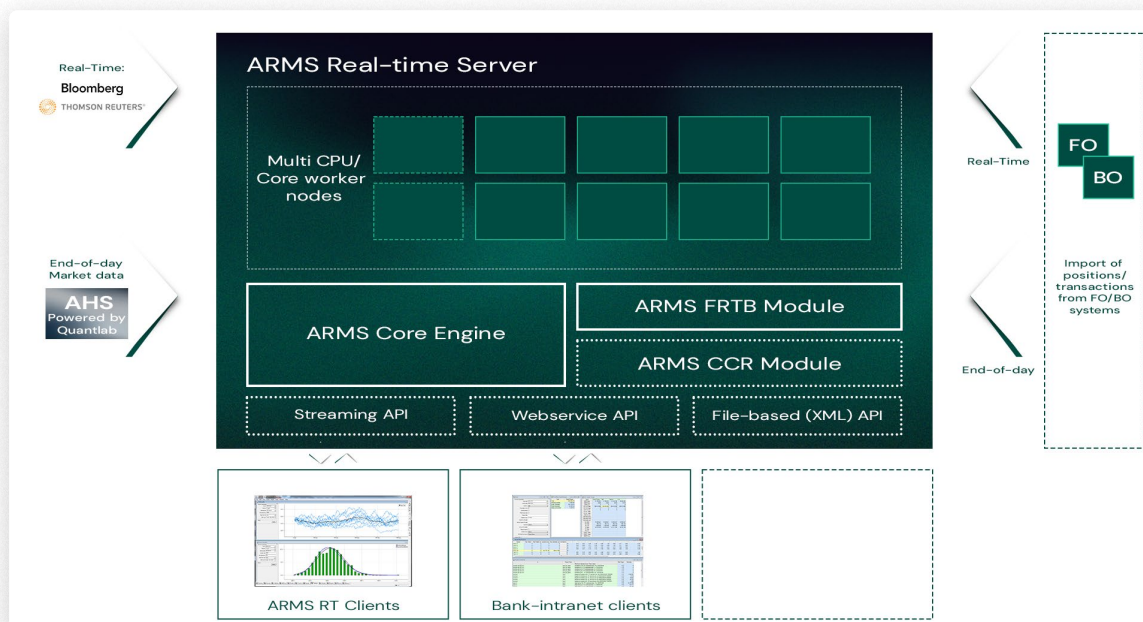- Flexible cashflow generation for liquidity

Parallel calculations on inexpensive hardware

- Open code repository with APIs
- Efficient and fast calculation factory
- Low cost of ownership

Local support and development

- Fast on-site response
- Quick development turn-arounds
- Development fee reductions for system owners

ARMS – A MODULAR ARCHITECTURE

ARMS REAL-TIME SERVER - RESULT DATA AGGREGATION

The ARMS server includes our rQube™ in-memory database, combining a traditional multidimensional OLAP cube with a hierarchical tree-graph for superior risk data aggregation and supporting minimal transactional recalculation for ultrafast real-time performance.
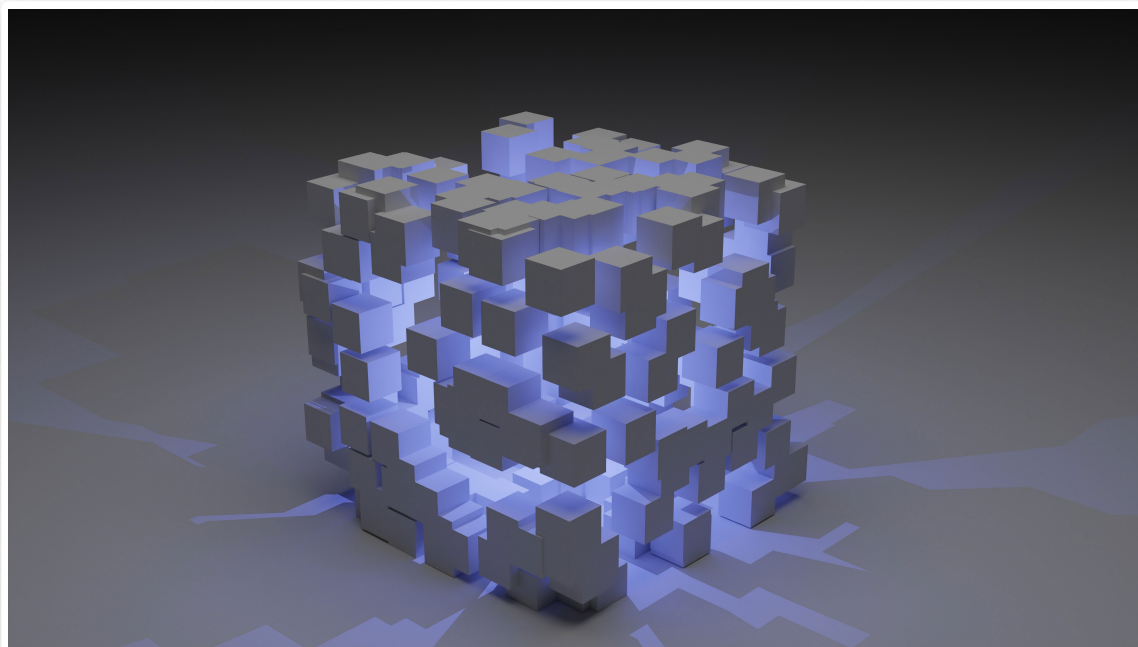
3RD PARTY TOOL INTEGRATION MADE EASY

The ARMS FRTB solution is implemented in Qlang, making it uniquely modular and flexible. With the performance of native optimized code, Qlang offers speed and code quality far beyond the scripting languages used by competing products.

An ARMS API Server acts as a host for varios protocols such as Json, Webservice and Rest type calls. It can embed its own cached results for fast access of previously calculated data and triggers for re-calculations when needed.