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RISK MANAGEMENT

ORE User Meeting 2018

Roland Lichters, Quaternion

Frankfurt, 23 November 2018

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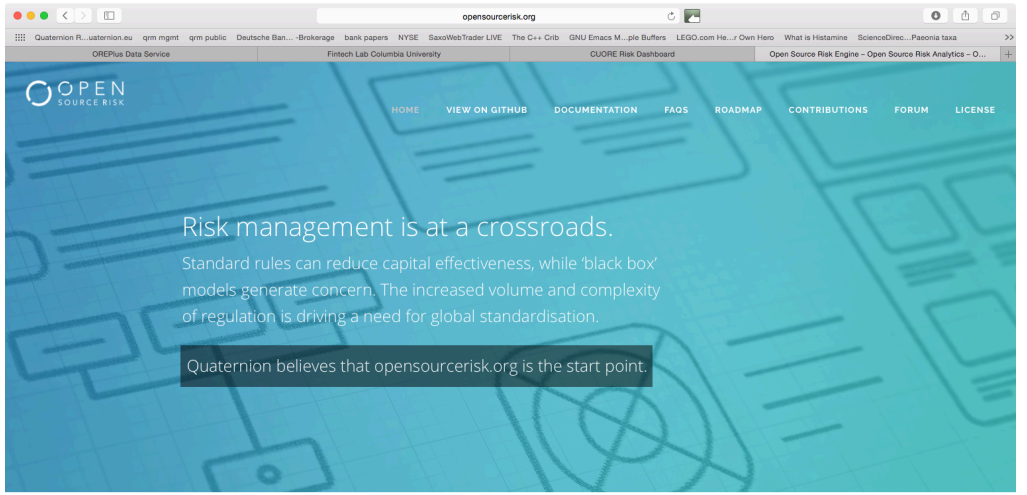
- **Welcome**
- Agenda

Recap: Open Source Risk Engine (ORE)

opensourcerisk.org

- provides **contemporary risk analytics** and **pricing**
- accessible to the end users by providing **transparent interfaces** for trade and market data, as well as system configuration
- **well documented** usage, methodology and codebase



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ORE Releases

October 2016: First release (v1.8.0.7)

Portfolio pricing and cash flow projection

IR/FX derivative portfolio analytics based on a Monte Carlo simulation framework covering

- Credit exposure evolution with netting and collateral
- Collateral modeling with Dynamic Initial Margin (DIM)
- Derivative value adjustments (CVA, DVA, FVA, COLVA, MVA)

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ORE Releases

May 2017: Second release (v1.8.2.0)

New

- Bond products
- Equity and inflation derivatives
- Framework for sensitivity analysis and stress testing, covering IR/FX

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ORE Releases

December 2017: Third release (v1.8.3.0)

New

- Inflation, Equity and Credit added to the sensitivity framework
- Inflation added to the MC simulation framework
- CMS-linked derivatives, Credit Default Swaps
- Bond amortization structures
- Parametric VaR
- Dashboard in collaboration with Columbia University's FinTech Lab

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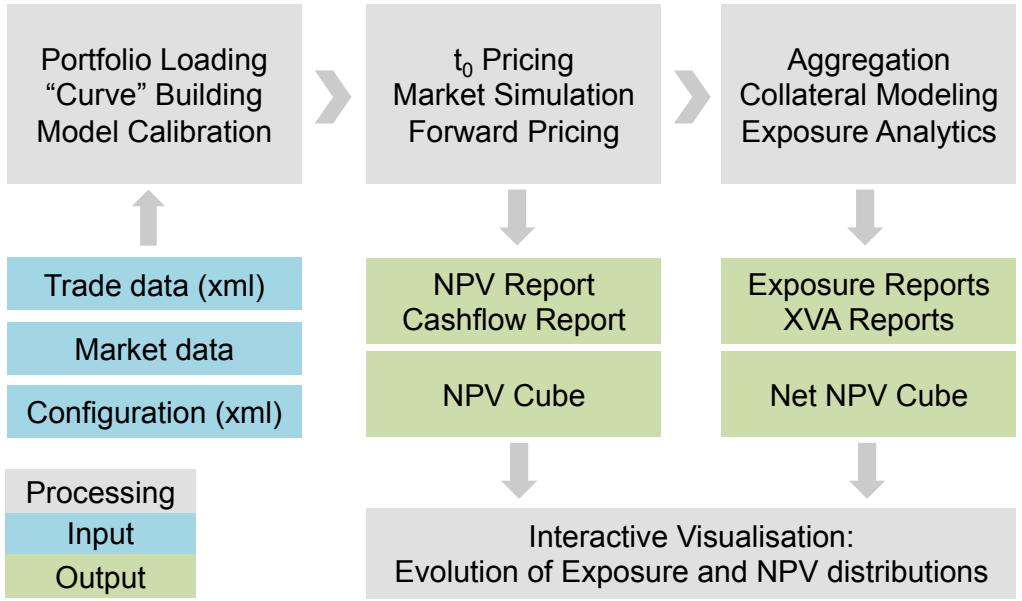
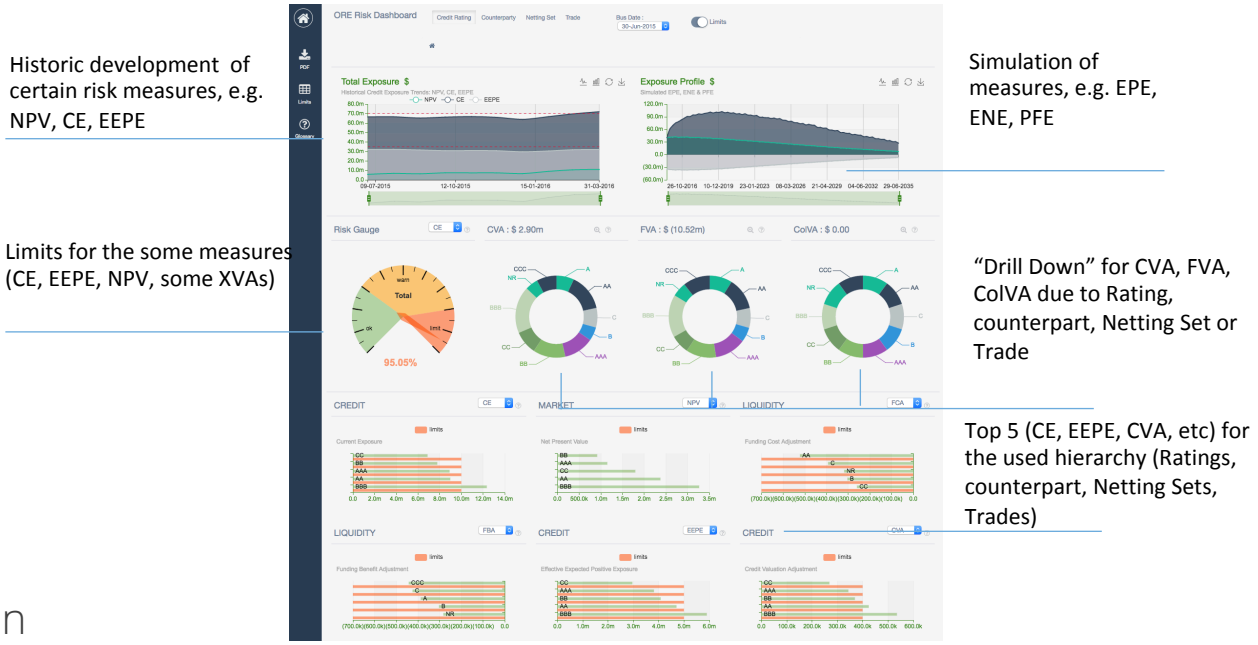
Columbia project



Web-based Risk **Dashboard** for interactive Reporting and presentation of ORE results



User Interfaces

- XML file driven **command line application**
- **Jupyter notebook** for NPV Cube and Exposure visualization
- Excel/LibreOffice Calc **spreadsheets** to kick off jobs, present results

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ORE Releases

Soon: Fourth release based on QuantLib 1.14

New

- Commodity Forward and Option, Equity Swap, CPI Cap/Floor, CMS Spread Option
- Various calendars and indices
- Extended list of examples and unit tests
- Various changes to facilitate proprietary client extensions of ORE
- Featuring ORE XML on http://opensourcerisk.org
- ORE SWIG project launched, for ORE in Python, Java, C# …

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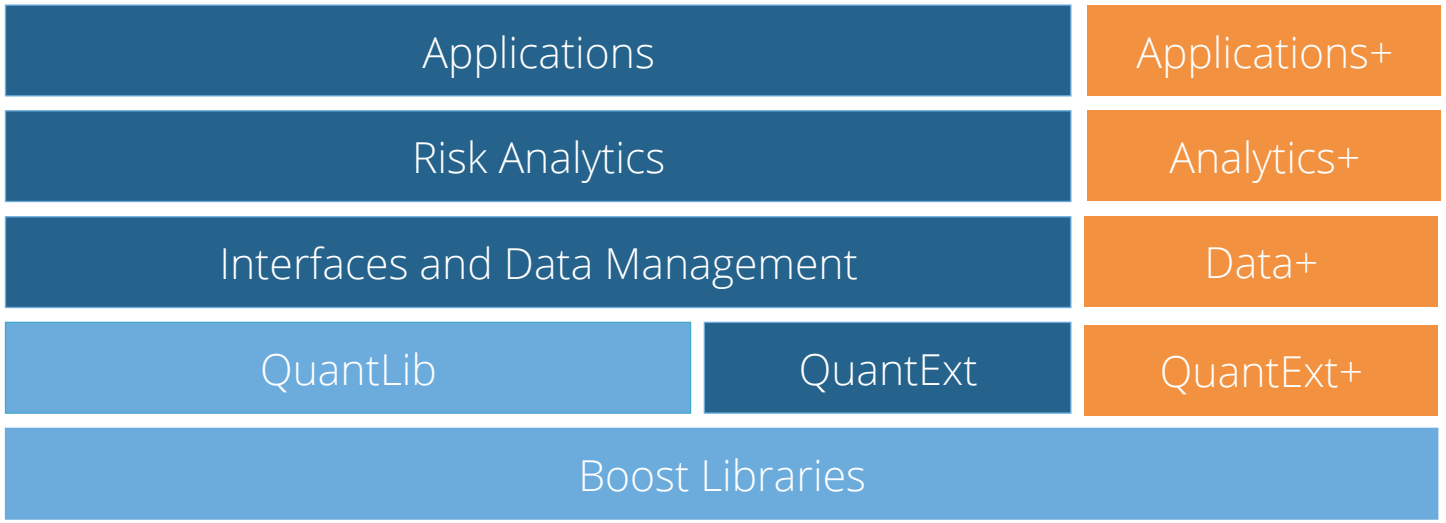
Facilitate proprietary extensions of ORE



- ORE applications, spreadsheets, launchers, dashboard
- Portfolio analytics and simulations
- Management of market, trade and configuration data
- QuantLib extensions

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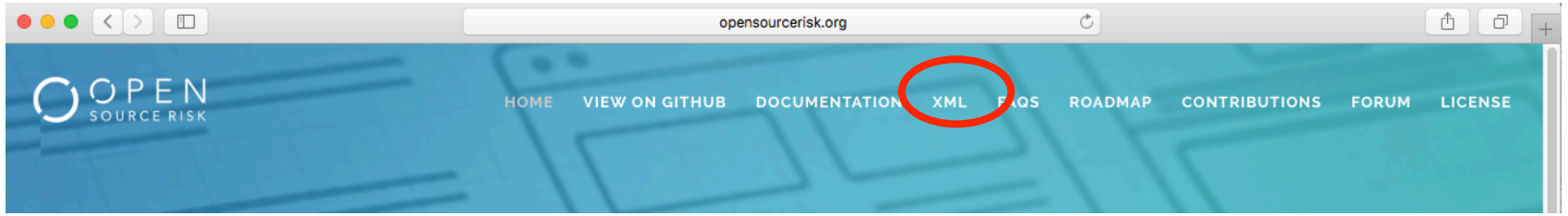
Featuring ORE XML



What is ORE XML?

ORE XML is an open source XML standard geared towards pricing and analytics of derivatives and other financial instruments. It establishes a protocol for describing and sharing financial instrument information electronically. The ORE XML representation closely maps the underlying QuantLib/QuantExt trade representation.

ORE XML is an open standard, available to all at no cost, and open to contribution from all. It is compliant with, and based on XML (Extensible Markup Language), the data-description meta language for describing data shared between applications. Unlike other XML standards for financial products, ORE XML is primarily focused on pricing and analytics with no superfluous fields beyond this primary scope. Extensibility is one of the main features of ORE XML and XML in general, meaning that it is possible to add or modify content models.

VIEW THE FULL GUIDE TO ORE XML

VIEW THE ORE XML SCHEMA ON GITHUB

Sample XML Code

- Interest Rates
- FX
- Commodity
- Equity
- Credit
- Inflation

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ORE Use Cases

ORE Use Cases we are going to hear about today

- OeBFA (Austrian Treasury): Derivatives Pricing and XVA Model Validation
- Columbia University: Systemic Risk Research
- Pfandbriefbank: Pricing Model Validation
- Commerzbank: XVA Model Validation
- Allianz Global Investors: Structured Loan Pricing
- Aareal-Bank AG: Financial Planning and Controlling
- AcadiaSoft: SIMM Backtesting and Benchmarking Service

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ORE Use Cases

More ORE Use Cases not presented today

- Aareal-Bank AG: Loan Portfolio Valuation and Sensitivity Analysis
- US Software Firm: Sensitivity Analysis for CRIF and ISDA SIMM production
- US Software Firm: ORE Integration for CVA
- US Investment Bank: Initial Margin Model development, pre-deal ISDA SIMM check
- UK Hedge Fund: Portfolio Valuation via ORE-Python
- UK Investment Bank: Dynamic Initial Margin model development
- JP/UK Investment Bank, London: Market Risk Model Validation

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Time table

09:15	Roland Kapl, OeBFA	XVA Valuation
09:45	Nikolai Nowaczyk, Quaternion	Systemic Risk
10:15	Dmitry Zaykowskiy, Pfandbriefbank	Pricing Model Validation
10:45	Coffee Break	
11:15	Patrick Büchel, Commerzbank	XVA Model Validation
11:45	Oleg Kulkov, Allianz Global Investors	Structured Loan Pricing
12:15	Andreas Kewenig, Aareal Bank	Financial Planning and Controlling
13:00	Lunch Break	
14:00	Niall O'Sullivan, Quaternion	AcadiaSoft's SIMM Backtesting and Benchmarking Service
14:30	Roland Lichters, Quaternion	ORE SWIG
15:00	Ioannis Rigopoulos, Deriscope	A precursor to ORE in Excel
15:30	Coffee Break	
16:00	Discussion	
17:00-19:00	Reception	

Firm locations

Quaternion™ Risk Management is based in four locations :

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