

# UnRisk

## UnRisk FACTORY

Automated Risk Management



## What is UnRisk FACTORY?

Facing high regulatory demands and the internal push for enhanced risk control, smaller and medium-sized financial entities demand effective and cost-efficient risk management tools. The limited number of staff in relevant departments requires highly automated solutions. UnRisk FACTORY offers comprehensive risk management and assessment for various types of instruments across all major asset classes. Calculations can be performed at both the individual instrument and portfolio levels, with options for grouping instruments and aggregating required metrics. Market, credit, and liquidity risks can be calculated and monitored. By integrating data persistence and data management with the powerful UnRisk LIBRARY, UnRisk FACTORY offers a seamless and efficient solution for risk management.

### UnRisk LIBRARY

UnRisk performs model calibration and financial instrument valuation using advanced numerical methods for rapid and reliable solutions. A critical step in the valuation process is the identification of the parameters of the stochastic models used for the simulation of the underlying risk factors, especially when facing complex inverse problems.

UnRisk algorithms, developed in collaboration with leading mathematicians, specifically address and solve these challenges. To tackle the forward valuation problem, UnRisk employs a range of techniques, including PDE solutions via Finite Difference/Element schemes, SDE solutions through (Quasi-) Monte Carlo, and direct methods like adaptive integration and Fourier techniques. This comprehensive approach allows the UnRisk LIBRARY to support an extensive array of models and financial instruments.



### UnRisk VaR MODULE and UnRisk SCENARIO MODULE

Performs parametric, historic and Monte Carlo Value at Risk calculations for a variety of risk factors.

For a deeper understanding of the sources of risk, UnRisk VaR MODULE allows the calculation of incremental, marginal and contribution VaR from single instruments up to the portfolio level. It goes beyond VaR to calculate essential metrics like expected shortfall and incorporates backtesting routines. Moreover, scenario analysis and stress testing are key features of UnRisk FACTORY, enhancing its comprehensive risk management capabilities.

### UnRisk xVA MODULE (optional)

Utilizing our most advanced numerical schemes, UnRisk xVA MODULE is capable of simulating exposures and calculating derived quantities like CVA and DVA. All risk factors within a portfolio are jointly simulated to generate market scenarios, and all instruments within the portfolio are assessed under these scenarios to determine their exposures. During the aggregation process, netting may be applied, and xVA management ratios are calculated, considering the probabilities of default for both the counterparty and the institution.

### UnRisk PRIIPs (optional)

Driven by regulatory requirements, UnRisk has developed a PRIIP engine. This engine covers all tasks from simulating the market data, building the scenarios, calculation of relevant cash flows, pricing instruments at different points in time to the calculation of all necessary key ratios to produce the PRIIPs-KIDs.

$$\frac{\partial C}{\partial t} + \frac{\sigma^2 S^2}{2} \frac{\partial^2 C}{\partial S^2} + rS \frac{\partial C}{\partial S} - rC = 0$$

## Key Features

### Administration

- Flexible definitions of users and their roles, along with data and parameter settings
- Task scheduling and monitoring

### Market Data

- Definitions, settings, qualifiers, templates for the relevant market data
- Access to data, history and events
- Models and calibration

### Instruments, Portfolios, Scenarios

- A broad coverage of instrument types and models
- Detailed scenarios and scenario grouping

### Valuation, Simulation and VaR

- Valuation of instrument groups, scenario groups, and portfolios
- Comprehensive assessments using parametric, historical, and Monte Carlo VaR
- Options for interactive or automated batch processing

### xVA

- Exposures for single instruments, netting sets and portfolios

## Key Benefits

- ✓ **Complete Evidence:** Integrates data and valuation management.
- ✓ **Easy Access:** Clients simply need a web browser to access the services.
- ✓ **Service Orientation:** Offers UnRisk application service and customized developments.
- ✓ **Extendibility:** UnRisk API allows to extract all information from the underlying databases.
- ✓ **Quick Set Up:** In full production within a few days.
- ✓ **Open Interfaces:** Enables access to data from UnRisk FACTORY throughout your organization.



# UnRisk

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