Multi-Asset Risk System. Leave nothing to chance.

Bloomberg Professional Services

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Contents

Analyze exposure.
Mitigate risk.
Prepare for
the unexpected.

Multiple solutions. One system. Bloomberg's Multi-Asset Risk System (MARS) is a comprehensive suite of risk management tools that delivers consistent, consolidated results across your entire firm. Powered by Bloomberg's world-class pricing library, market data and mortgage cash flow engine, MARS enables front office, risk and collateral professionals to analyze their trading and investment portfolios, manage and mitigate their exposure and ready themselves for any turn of events.
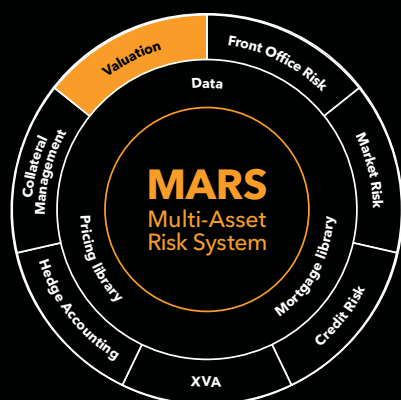
Bloomberg Multi-Asset Risk System (MARS)

Analyze exposure, mitigate risk, and prepare for unexpected market changes. All powered by Bloomberg's analytics and data.

OMS integration

- Buy side (AIM)
- Sell side (TOMS)
- Third-party OMS

Pricing & Data

- State of the art models
- Cross-asset library
- Contract creation
- Valuations
- Real-time & snapshot data

Front office risk

- Intraday pricing & greeks
- EOC & on-demand risk reports
- P&L Explain
- What-if trade analysis
- Pre-Trade Margin
- Scenarios & stress testing
- Portfolio margin calculations
- Lifecycle management
- Projected & stressed cashflows
- Regulatory analytics (PRIIPs, SIMM)
- Excel derivatives & mortgages toolkits

Market risk

- Full revaluation VaR & expected shortfall
- Greek sensitivities
- Historical, hypothetical & predictive stress tests
- Tracking error & relative risk statistics
- FRTB regulatory capital
- Buy & sell-side regulatory reporting
- Pre & post-trade analytics for all risk measures

Credit risk

- Portfolio, obligor & obligation analysis
- Early warning/outlier identification
- Credit scorecards & benchmarking
- Default probability with term structure
- Model-implied CDS
- Loss given default & recovery
- Knowledge date & as-of date analytics
- Parameter scenarios

XVA

- Valuation adjustments for OTC derivatives incl CVA, DVA, FVA, MVA & KVA
- Counterparty credit risk exposure metrics (PFE)
- Regulatory capital calculations (SA-CCR)
- XVA/PFE pre-trade analytics – position what-if and CSA what-if
- XVA sensitivities

Hedge accounting

- US GAAP & IAS/IFRS
- Micro, Macro & Last-of-layer method
- Cash flow, Fair value & Net investment hedge types
- Monthly reporting includes: valuations, scenarios & settlement cash flows

Collateral management

- Legal documentation management
- Dispute management
- Portfolio margin calculations & workflow (IM & VM)
- Automated messaging
- Initial margin calculations (SIMM, CCP IM)
- In system reconciliation
- Risk analytics

MARS API

- Programmatic access
- Cross-asset data snapshot
- System integration
- Custom reporting

MARS Valuations

A comprehensive pricing library

In evolving markets with increasing regulatory oversight, both buy-side and sell-side firms need a powerful solution to value their portfolios and understand their key risks. Using comprehensive pricing library and market-leading Bloomberg data, MARS Valuations solution delivers credible and comprehensive end-of-day market values and Greeks for your entire portfolio for enterprise use with a powerful, versatile and highly intuitive experience.

Broad coverage, flexible pricing

MARS Valuations' comprehensive asset class coverage encompasses a broad spectrum of financial instruments, including cash products, exchange-traded, over-the-counter derivatives and structured products. And it provides users full transparency into and flexibility with market data and pricing models.

The right model for your needs

Bloomberg MARS Valuations is built on a comprehensive quantitative library that offers a range of pricing models. Whether you are pricing an FX basket, a long-dated FX-IR hybrid, an equity auto-callable or an interest rate range accrual, the pricing library provides the right modeling technique to capture the market dynamics. The list of models includes but is not limited to local volatility, stochastic volatility (such as Heston Model), stochastic local volatility, Hull-White one-two-factor, shifted Libor market model, hybrid of Hull-White one-factor and local volatility.

Market-leading data

As industries become more aware of the hidden complexities within financial products, high-quality underlying market data is playing an ever-more-prominent role. Bloomberg employs innovative data-cleaning techniques and algorithms to generate high-quality data. MARS Valuations enables you to feed high-quality Bloomberg data and snapshot-based golden data into its state-of-the-art pricing library to derive valuations for enterprise use.

BVAL Derivatives

BVAL Derivatives is Bloomberg's independent valuation solution for OTC derivatives. It capitalizes on our renowned quality of available datasets across all asset classes and the expert knowledge of our financial engineering team. We support both ongoing and historical valuations of OTC products, from simple linear contracts up to complex exotic structures. BVAL Derivatives clients have dedicated account management support and direct access to our financial engineering team in order to make the most defensible investment, accounting, and risk management decision.

Derivatives Data and Analytics Service (DDA)

Bloomberg Volatilities (BVOL) are smooth and arbitrage reduced surfaces designed to price derivatives and complex products to accurately represent the market at any given snapshot time. BVOL surfaces provide state of the art calculation methodologies, flexible and robust distribution, and wide coverage across different asset classes (Equities, Interest Rates, Inflation, Foreign Exchange, Commodities and Credit).

MARS Front Office

MARS
Multi-Asset
Risk System
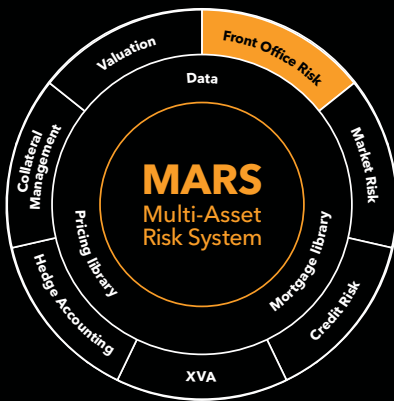
Spot & manage portfolio risk – intraday, every day

MARS Front Office provides a comprehensive suite of risk analytics that delivers consistency between risk and the front office. With term structure Greeks, advanced scenario and stress test capabilities, P&L explain, as well as streamlined workflow solutions, MARS Front Office has everything you need to increase operational efficiency, gain greater consistency and transparency to navigate a challenging business landscape. MARS Front Office allows you also to adapt in a timely manner to new regulations, such as PRIIPS, IRRBB, IFRS17, and LDTI.

Seamless OMS & data integration

MARS Front Office – and the entire MARS family of solutions – is fully integrated with Bloomberg's other market-leading solutions, including the Bloomberg Terminal® and our range of order management systems for both the buy side and sell side. Monitor the value of your portfolios in real time, conduct pre-trade analysis, analyze hedging and investment decisions and perform intraday life cycle and cash flow management – all on a single platform.

Accurately price cross-asset portfolios

MARS Front Office is built on consolidated cross-asset pricing libraries that integrate Bloomberg Derivatives single-security calculators – SWPM for interest rate derivatives, OVML for FX and commodities, OVME for equities, CDSW for credit and the award-winning Bloomberg multi-asset derivatives library, DLIB. Combined with Bloomberg's comprehensive market data, MARS Front Office can provide books-and-records quality valuations for portfolios spanning the full spectrum of asset classes and complexity.

Calculate the right margin

MARS Front Office calculates swap Initial Margin (IM) using CCP IM models for cleared netting sets (CCP/FCM pair) and for OTC Bilateral netting sets with ISDA SIMM. Lower your capital requirements using incremental IM and "Porting" analysis across cleared and non-cleared netting sets to select the optimal trade venue. MARS also facilitates the attribution, transparency and reporting of SIMM IM risk classes and Greeks for all non-cleared netting set.

## MARS pre-trade and Excel toolkits

MARS Front Office allows access to several Excel-based toolkits for the creation of customized pre-trade pricing tools driven by Bloomberg pricers for trading desk workflows.

- Curves Toolkit (CTK): For curves analytics
- Swaps Toolkit (STK): Leverages the Terminal SWPM pricing application
- Derivatives Toolkit (DTK): Leverages the Derivatives Library (DLIB) pricing application
- Core Mortgage Premium (CMP): Analytics for mortgage securities using the Bloomberg Agency MBS Index Prepayment Model (BAM)

Asset-Liability Management (ALM)

MARS Front Office provides single platform views of a full balance-sheet with intraday pricing and risk management of assets, and revaluation of liabilities. Combined with powerful stress testing tools, and a cashflow engine designed to handle cash bonds, mortgages, and derivatives, MARS provides a comprehensive set of analytics for Asset Liability Management for Insurers, Pensions, Asset Managers, and Corporations. Bank treasuries can access banking book features such as IRRBB, EVE, and NII calculations. All analytics seamlessly integrate into your technology stack via rich set of APIs and machine-readable reports.

MARS Market Risk
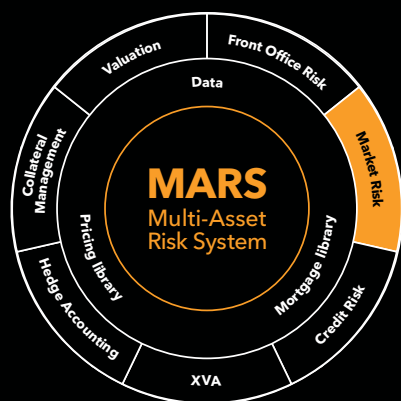
Cover every angle with risk analytics customized to your enterprise

In today's complex and interconnected markets, both buy-side and sell-side firms need a powerful solution to monitor, assess and manage intraday and end-of-day risk. MARS Market Risk is a complete risk analytics and reporting solution designed for all risk managers, from the chief risk officer to the risk analyst. Powered by Bloomberg data and analytics, our multi-asset-class offering includes all standard risk measures that financial institutions rely on for internal risk management, management reporting, investor reporting and regulatory compliance – comprehensive capabilities that allow firms to consolidate all risk calculations in one place.

Broad product coverage

If you can price a product on the Bloomberg Terminal®, you can manage its market risk. With product coverage across multiple asset classes, including equities, fixed income, commodities and FX, MARS Market Risk covers the vast majority of both listed and OTC instruments.

Powerful analytics

Leveraging the power of Bloomberg market data and front office pricing calculators, MARS Market Risk contains an extensive suite of metrics, including fully configurable VaR and Expected Shortfall analytics, a flexible stress testing toolkit for historical and predictive scenario analysis. A full set of Greek sensitivities suitable for managing a book and calculating regulatory measures such as SIMM and FRTB SA is also included.

Customized & streamlined workflow for your enterprise

Our robust enterprise workflow includes automated daily position feed handling, exception reporting and downstream file delivery for enterprise-wide use. Additionally, historical results archiving enables trend analysis and storage of risk analytics. All so you can gauge risk levels precisely and make faster, more incisive recommendations for your firm.

Seamless regulatory risk reporting including FRTB SA capital

MARS Market Risk can help you comply with a number of key regulations, including but not limited to FORM PF Stress Testing, AIFMD Regulatory Reporting, UCITS Regulatory Reporting, FRTB Standardized and Internal Models Approaches, Basel-compliant market risk analytics and CCAR Stress Testing.

MARS Credit Risk
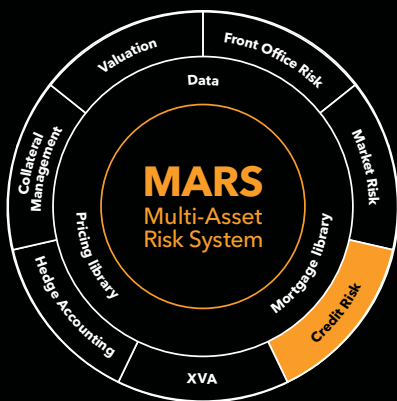
Daily management of credit risk

MARS Credit Risk helps traders and risk managers identify, assess, monitor and manage credit risk in challenging business and regulatory environments – whether from investments, counterparties, customers or suppliers. The platform leverages Bloomberg's data and analytics to provide a comprehensive and flexible credit management suite, featuring extensive credit analytics, multiple scenario-analysis capabilities and streamlined workflow solutions.

Bloomberg's analytical solution:
MARS Credit Risk

MARS Credit Risk leverages Bloomberg's extensive risk analytics and rich data sets to provide obligor and obligation-level credit analytics that incorporate both market and fundamental information and:
• Delivers a full term structure of default probabilities and model-implied credit default swap spreads
• Produces an early warning signal, with a high accuracy ratio, about obligor credit quality (and relevant obligations, such as bonds and loans)
• Powerful and flexible scenario analysis enables rapid evaluation of changing or hypothetical conditions
• Evaluates the potential Loss Given Default and Recovery for all covered obligations
• Assesses a large universe of corporate and sovereign obligors and obligations, including custom firms not in the Bloomberg ecosystem
• Provides quantitative support for Financial Instruments accounting requirements including evaluations of and related to (Current) Expected Credit Loss
• Integrates with MARS Risk Management products, to provide a robust risk management solution.

Methodology and Approach:
How are these analytics produced?

MARS Credit Risk utilizes state-of-the-art credit models and a wealth of data to provide extensive coverage at obligor and obligation levels:
• Leverages credit risk models to calculate distance to default and probability of default and model-implied CDS spreads, for public and private firms and even those firms not in Bloomberg's ecosystem
• Incorporates market and fundamental information at the same time to enable a detailed and unbiased current and point-in-time future view of a firm's creditworthiness
• Provides an enhanced and unbiased view on the potential Loss Given Default and Recovery, informed by evaluation of each firm and historical experiences across each region and sector.

MARS XVA
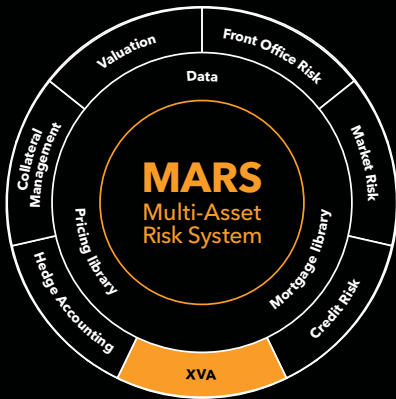
Manage exposure & valuation adjustments for non-cleared OTC derivatives

Regulatory and accounting changes since the 2008 financial crisis have made measuring and managing OTC derivative counterparty exposures and their associated costs a vital focus for financial institutions.

Built on Bloomberg's market-leading data, pricing and analytics, MARS XVA delivers a comprehensive solution for counterparty risk analytics and reporting for OTC derivatives. Highly versatile, MARS XVA fulfills the needs of front office traders calculating and hedging XVA and credit department risk managers using PFE to manage exposure.

A complete XVA solution

MARS XVA provides a full suite of metrics to help you quantify valuation adjustments used by the market to capture credit, funding and capital risks.

Credit

While inter-bank trading in vanilla interest rate and FX derivatives has migrated toward central clearing, trading between banks and corporate, sovereigns and pension funds remains mostly bilateral. MARS XVA gives you the ability to quantify expected counterparty losses through CVA for optimal efficiency.
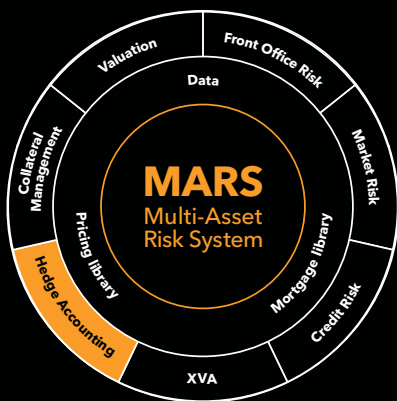
Funding

With banks unable to fund at pre-crisis levels, the market recognizes the importance of quantifying the funding costs of OTC derivative portfolios. MARS XVA ensures that you can calculate both the costs arising from counterparties trading under less-than-perfect variation margin arrangements (quantified through FVA) as well as the initial margin costs incurred under non-cleared margin rules for bilateral trading (quantified through MVA).

Capital

Capital requirements for counterparty default risk have increased substantially since the crisis and a new CVA capital charge has also been introduced. MARS XVA lets you quantify your capital requirements at the time of trading and on an ongoing basis to help optimize your capital usage.

MARS Hedge Accounting

Complete hedge accounting solution

Bloomberg's market-leading, fully integrated hedge accounting platform provides a comprehensive solution to comply with the requirements of the hedge accounting and related financial instrument standards. The system facilitates the creation of coterminous hedge documentation, prospective hedge assessment testing to determine if a strategy can be considered highly effective and measurement of hedge effectiveness under both International and U.S. accounting standards.

MARS Hedge Accounting is continually updated as new accounting standard guidelines are published and market practice evolves to ensure the system is always current. Bloomberg updates the underlying valuation tools as market convention changes, for example IBOR transition.

Effectiveness testing and Fair Value measurement

MARS Hedge Accounting supports an extensive list of prospective and retrospective testing methods, including Critical Terms Match, Shortcut, Scenario Analysis, Dollar Offset and Regression testing. These quantitative tests can be run on a periodic or cumulative basis at each reporting date to support the assertion that the hedge is highly effective.

Integrated with MARS XVA to quantify CVA/DVA adjustments into the valuation of derivatives used for hedge accounting purposes, in both the assessment and measurement of effectiveness, is a seamless process and ensures compliance with fair value accounting standards.

Reporting and disclosure

The MARS Hedge Accounting reporting suite allows users to quickly and simply obtain detailed measurement and disclosure output in order to comply with the reporting requirements of IAS 39, IFRS 7, 9, 13 and ASC 815, 820. Reports and disclosures can be run on a consolidated or trade level basis and include hedge adjustment, OCI release, FAS161 current/non-current; asset/liability) and FX/IR split.

MARS Hedge Accounting is is SOC1 certified, allowing clients' auditors to rely on the control framework established by Bloomberg for the generation of records for financial transactions recognized in the user's financial statements.

Month-end Workflow with APIs

HEFF API provides programmatic access to a scalable and modular reporting framework, via WebAPI: a popular interface, ubiquitous in our daily lives. HEFF API is a cost-effective, seamless technology enabling a more rule-based accounting month-end process.

MARS Collateral Management

Make the right call

Since the financial crisis, regulatory reform has placed increased emphasis on collateral. It's more important than ever to choose a technology partner that can both help comply with the regulations and provide a holistic collateral management workflow. Bloomberg's Collateral Management solution (MARS Collateral) is an end-to-end, straight through and automated workflow designed for collateral managers to risk analysts to manage, process and monitor collateral across multiple asset classes. With evolving regulations and more complex workflows, MARS Collateral aims to help overcome the day-to-day challenges of valuations, margin call and dispute management and reconciliations.

End-to-end workflow

MARS Collateral is integrated with Bloomberg's order management systems for both buy and sell side clients. It allows you to holistically manage your collateral lifecycle on the Bloomberg Terminal, from viewing legal entity and agreement data, performing pre-trade SIMM analytics, monitoring and processing margin calls, to viewing your collateral inventory and performing portfolio reconciliations. MARS Collateral offers automated workflows, including integration with Acadia's Margin Manager for call processing and Initial Margin Exposure Manager for SIMM reconciliations. With a flexible report manager, you can also run automated scheduled reports. The functionality and data integration capabilities provides you with a more efficient end-to-end workflow, reducing operational and credit risk.

Powerful analytics

Powered by Bloomberg's world-class pricing library, MARS Collateral features cross-product support with integrated calculations, allowing for best-in-class data and pricing models. In addition to variation margin, in-system margin calculations include initial margin such as standard look-up, ISDA SIMM and connectivity to CCP APIs for cleared swaps and futures initial margin. MARS Collateral also offers SIMM back-testing over a historical period and benchmarking and a flexible stress testing tool to perform scenario analysis across your netting sets.

MARS API

MARS Application Programming Interface (API) is designed to enable programmatic access to all MARS risk solutions, allowing seamless integration with financial institutions' technology suits. It enables clients to access MARS structuring, pricing, Greeks, stress test, scenario analysis, hedge accounting, credit risk, counterparty risk and other risk analytics via Bloomberg real-time channels (SAPI and B-PIPE for server based, and Desktop API for desktop based) using the Bloomberg API (BLPAPI) framework, or the end of day RESTful API platform. In addition, you can access these services through BQL & BQNT, delivered to your virtual private cloud (VPC) in public clouds by a secured link.

Key benefits

Single-market data snapshot
• Each portfolio-level calculation is processed with a single-market data snapshot

Full multi-asset coverage
• Equity, FX, fixed income, inflation, credit and mortgages
• Listed and OTC derivatives, from vanillas to exotics

Large analytics library
• Mark-to-market and Greeks
• Flexible key rate risk
• Custom scenario analysis
• Real-time and historical analytics

State-of-the-art models
• Large library of derivatives pricing models
• Flexible and persistent model settings

Delivery

MARS API is available as a delivery mechanism for:
• MARS Front Office
• MARS Credit Risk
• MARS XVA
• MARS Hedge Accounting
• MARS Market Risk*
• MARS SIMM*

*in development

MARS Multi-Asset Risk System
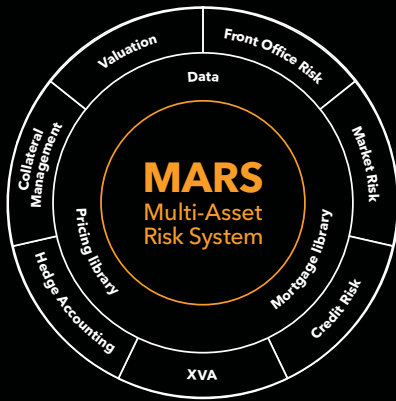
The Multi-Asset Risk System provides consistent and consolidated valuation, product lifecycle analysis, market risk, counterparty risk and collateral management.

MARS is powered by Bloomberg's world-class pricing library, market data and mortgage cash flow engine and enables front-office, risk and collateral professionals to analyze their trading and investment portfolios, mitigate risk and prepare for the unexpected.

Learn more

To learn more about Bloomberg's risk solutions, visit **RISK <GO>** on the Bloomberg Terminal or contact us at riskinfo@bloomberg.net.

Take the next step.

For additional information,
press the <HELP> key twice
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