- **Fair Pricing & Transparency:** Pre/post-trade pricing of financial derivatives

- **Model Validation:** Richest set of models & full transparency

- **Counterparty Risk Analytics:** Providing cutting edge CVA, DVA, PFE & FVA

- **Consistent & Accurate Risk Reports:** Accurate risk numbers across all asset classes

- **Scenario Analysis:** Bump & twist any risk component

ASSET CLASS COVERAGE

Equities, Interest Rates, FX, Credit, Commodities, Inflation, MBS, Cash Securities, Structured Products, Exchange Traded, and *all* OTC Derivatives – Vanilla through Exotic.

A SINGLE ANALYTICS PLATFORM

Whether you need a single asset class or a complete cross-asset solution, Numerix CrossAsset can be scaled to meet your company's needs, from stand-alone desktop installations to enterprise-wide deployments. At the foundation of the Numerix architecture is the most sophisticated library of cross-asset models and methods that has been developed and integrated by our award-winning quantitative research team.

Numerix: Leading the Industry in Advanced Models and Methods

Comprehensive CrossAsset Library

The Numerix CrossAsset library offers the industry's most comprehensive collection of models and methods, allowing institutions to price any conceivable instrument using the most advanced calculations, in addition to a wide range of calibration options for generating market-consistent valuations. With an infinitely flexible architecture for defining bespoke deals—and the ability to integrate your own internal models—Numerix allows you to deploy a unified pricing and risk solution for all your derivative and fixed income positions across all trade types.
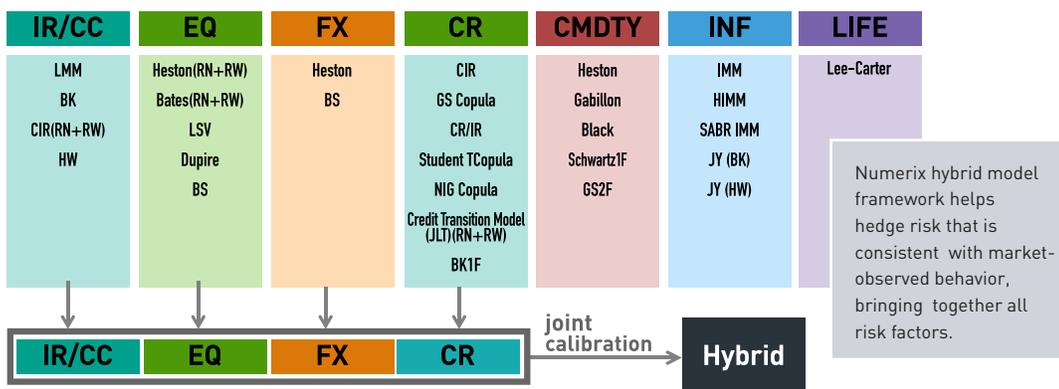
Optimized Numerical Methods

Pricing derivatives often involves intense computations. Our quantitative analysts have developed methods that have been optimized for speed and accuracy, enabling rapid calculations for even the most complex instruments.

The Industry's Only Independent Solution for Hybrids

Numerix hybrid model framework produces accurate valuations for instruments consisting of multiple underlyings through joint calibration, and incorporating multiple stochastic processes.

The Numerix Hybrid Model Framework: Unifying All Asset Classes

IR/CC	EQ	FX	CR	CMDTY	INF	LIFE
LMM	Heston(RN+RW)	Heston	CIR	Heston	IMM	Lee-Carter
BK	Bates(RN+RW)	BS	GS Copula	Gabillon	HIMM	
CIR(RN+RW)	LSV		CR/IR	Black	SABR IMM	
HW	Dupire		Student TCopula	Schwartz1F	JY (BK)	
	BS		NIG Copula	GS2F	JY (HW)	
			Credit Transition Model (JLT)(RN+RW)			
			BK1F			

Numerix hybrid model framework helps hedge risk that is consistent with market-observed behavior, bringing together all risk factors.

IR/CC EQ FX CR → *joint calibration* → **Hybrid**

Structure and Price Any Type of Derivative or Structured Product

Structure and price any deal type with our infinitely flexible deal-structuring architecture. Whether using market standard analytic pricers, PaymentStreams or our unique payoff scripting language—users can leverage the most comprehensive cross-asset library of market-standard models and proprietary numerical methods.

Analytic Pricers

Numerix offers hundreds of industry-standard, pre-defined templates and closed-form pricers that represent commonly traded deals, using market-accepted models and pricing practices.

PaymentStreams

Many complexities can arise in over-the-counter derivatives, such as: introductory periods, adjustments in the payoff formula, multiple termination conditions and contractual changes in terms (such as daycount basis). Numerix PaymentStreams approach accounts for these types of variations in a very intuitive way, closely resembling a term sheet and extending all of the flexibility of Numerix beyond quantitative developers. Our PaymentStreams method of structuring also allows for advanced cashflow logging, giving the user detailed information such as: fixing date, accrual start and end, payment date, daycount fraction, discount factor, expected coupon rate, notional repayment—and even the implied fx forward rate, for each and every coupon period. This level of detail enables a high level of transparency into the underlying analytics.

Scripting Capability

Users can also define any bespoke custom instrument—and keep on top of derivatives innovation using Numerix scripting capabilities. For example, users can define a wide range of extremely complex instruments, including: equity baskets (Himalayan options), performance options, basket knock-out options, in addition to structured loans and variable annuities.

Model Validation

Independent, Transparent, Trusted

To help institutions accelerate their operations Numerix has developed analytics feature automated testing for model validation, to ensure models have been implemented properly, perform as expected providing good hedges in all market conditions, and to understand model behavior and limitations under extreme market scenarios.

Standardized Testing

Whether your front office and risk department are utilizing Numerix analytics or you are utilizing proprietary models, Numerix CrossAsset provides the necessary standardized tests to confirm model accuracy and performance confirming both mathematical and financial correctness of Numerix models.

Auditability

Any validation test can be serialized and exported into a self-contained Numerix XML file that captures all model inputs, including terms and conditions, market data, model choice and calibration assumptions, calendars and more. For those utilizing Numerix models in trading and risk operations, once converted to XML, the model can be ported throughout the institution for use within any operations. Additionally models can be "rehydrated" at any future date allowing users to audit and review the model all without the need to reconstruct historical pricing environments. The Numerix XML can also be ported to any regulatory or audit agency if required.

Risk Scenario Framework

Numerix Risk Scenario Framework is designed to enable financial institutions to automate the modeling and pricing of portfolios of non-loan securities and derivatives held by operations, such as treasury departments and investment banking subsidiaries—specifically for structuring custom greeks and stress tests.

Numerix uses this stress testing framework to automate the estimation of a portfolio's value changes, gains, and losses under circumstances that reflect different scenarios required by a financial institution for stress testing. A financial institution's book of records is the primary data set with which the Risk Scenario Framework is integrated in order to perform scenario-based analyses and projections on all of the firm's positions.

Solution Analysis

Risk Scenario Framework, Numerix's stress testing capability, can be used to calculate central difference Greek sensitivities such as Interest Rate DV01, equity delta, and vega sensitivities but can also be used to create large scale scenario shocks.

- *A framework that allows Greeks and sensitivities to be calculated across asset classes for any market data environment*
- *One report that has user-defined statistics that can be calculated consistently across one or all asset classes*
- *The Greeks can be aggregated by asset class*
- *Create bespoke market scenarios, risk and P/L decomposition reports*

From Trading Desk to Enterprise Risk Management — Numerix Easily Integrates Within Your Operations

Whether on a single desktop, across different trading desks, or enterprise-wide—Numerix users are empowered to structure trades in Excel and load them into a single Trade and Data Repository.

The Numerix SDK (C#, C++, Java) includes CrossAsset Integration Layer (CAIL)—a data-driven interface that empowers users and partners to non-programmatically extend CrossAsset with custom interfaces, new models and business logic.

Using the Numerix SDK with the CrossAsset Integration Layer, clients and partners can:

- *Leverage Numerix market-tested models and methods in existing systems across the full trading and risk lifecycle*
- *Easily extend production platforms' deal coverage across asset classes, including exotics and structured products*
- *Employ consistent valuation methods across the enterprise*
- *Enable advanced risk analysis and reporting*
- *Integrate a wide range of custom applications, such as visualization and master data management tools*