Sophis

by teciem

The unified platform for pricing, trading and managing equity and commodity derivatives — with transparent risk and automated processing built in.

FACTSHEET

Sophis by Teciem delivers faster pricing, smarter hedging and seamless lifecycle management for investment banks' trading desks, structured products and hedging solution providers, and cross-asset regional banks.

Equity and commodity derivatives

With a strong focus on complex derivatives and structured products, Sophis offers cutting-edge solutions to investment banks and other corporate organizations.

The last decade has seen sell-side equities suffer due to post-financial-crisis declines in volatility and ongoing implementation of US and European regulatory regimes. This has led to the delicate balancing act of the need for systems flexibility and transparency, on the one hand, and the requirement for operational stability, regulatory compliance and integrated risk management, on the other.

To help firms achieve this balance, Sophis provides a single solution that delivers functional security inventory management, collateral management, secured funding, basket lending, taxation management and term security finance. In addition, the P&L and risk management features are fully integrated with Sophis derivatives modules and, in particular, delta one products.

Key benefits

- The most comprehensive coverage of equity derivative products
- A full set of pricing models developed and maintained by a Sophis-dedicated quantitative team
- Cross-asset capability to build the most complex structured and hybrid products
- Fully integrated front-to-back-office application (OTC and listed securities) for seamless trade processing
- Flexible and customizable modules to enable creation and integration of new instruments, risk scenarios and proprietary pricing for rapid time to market
- More than 20 years' experience working with industry leaders who trade equity and equity derivatives

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Covering a broad range of products and markets, our solution delivers a comprehensive view of your trading books.

Equities

- Global equity
- ADR
- Equity index

Volatility derivatives

- Volatility index for major equity market (for example, VIX), VIX futures, Options on VIX futures
- Variance swap, volatility swap, gamma swap, correlation swap

Futures and options

- Equity/index future, forward-listed options and OTC options include quanto, compo, barriers, digital
- Exercise type: European, American, Bermudian, Asian Lookback

Dividend derivatives

- Dividend swap
- Dividend index future, option on dividend index future
- Convertible bond

Structured and hybrid

- Multi-underlying products, worst-of/best-of, basket, Rainbow, weighted baskets
- Cliquet, Auto callable, Range Accrual, Accumulator, Dispersion, CPPI, Mountain ranges include Himalaya, Anapurna
- Convertible bond

Delta one product

- Synthetic repos, stock loans
- CFD, total return swap – single name, basket
- Synthetic ETF swap, index swap
- Total return/Excess return index

Arbitrage

Market making

Structuring

Proprietary trading

Equity finance

Synthetic prime brokerage

Functionality for traders/ risk quants/operations.

- Real-time and custom market data
- User-friendly and flexible trade entry
- Real-time position keeping, P&L and risk indicators monitoring
- User-friendly and flexible trade entry
- Model calibration and pricing blotters
- Exposure monitoring: Breakdown by equity, index and sector
- **Hedging tool**: (D, G) Greeks, equity, IR, Forex and CD
- **Risk management**: Risk limits, risk matrix, bucketing and stress tests, VaR

- **P&L monitoring**: Variation and attribution by effect
- Entire front-to-back trade processing
- Customizable workflow for all securities, listed, OTC products
- **Corporate actions processing**: dividend split, merger, demerger, etc.
- **Automatic tickets**: cash flow, expiry, fixing, etc.
- **Data consistency**: Real-time monitoring, alerts

Pricing models

- Deterministic for futures and swaps
- Black & Scholes, Cox
- Explicit PDE with Black & Scholes/ local volatility model
- Monte Carlo with Black & Scholes/ local volatility / Heston for multi-underlying and path-dependent structures
- Carr & Madan, Friz-Gatheral, Heston volatility with Gauss-Lobatto scheme
- Regime switching jump-diffusion, Tsiveriotis & Fernandes

Market data management

The forward price of a share is calculated based on the share's current spot price, interest rate, dividend rate and repo rate.

Interest rate curve

- OIS discounting and joint calibration from money-market, IRS, OIS, FRA/Future, basis swap and more
- Real-time and EOD calibration of interest rate curves from data provider feeds (for example, Reuters, Bloomberg)
- Minimum maintenance of curves with automatic futures roll
- Multi-curve framework, automatic or user-defined market data assignment rules on the discount curve or forward curve by product type or specific criteria
- Support of negative rates

Repo curve

- Linear interpolation of repo curve
- User-defined time basis (for example, ACT/365) and computation mode (for example, linear) for repo factor computation

Volatility

- Intraday implied parametric volatilities calibrated from real-time data feeds: Hyperbolic, parabolic, Gatheral stochastic volatility implied, along with toolkit customization
- Consistent volatility management across indices and underlying components
- Volatility interpolation and extrapolation models (bi-linear, cubic spline) as well as market conventions (moneyness – spot/forward, day count conventions) can be defined globally or on each equity level
- The cash dividend is considered in the time interpolation of the volatility surface
- Ability to use different volatility sets for different users

Correlation

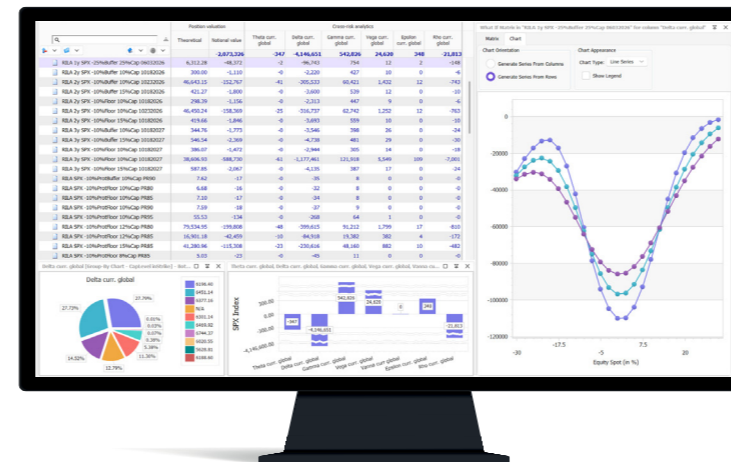- Cross-asset hybrid time-dependent correlations (Equity, FX, IR, and so on)

Dividend

- **Dividend types**: Cash (ordinary), tax credit, optional, special dividend (not used to forecast future dividends), cyclical dividend
- Dividend value can be expressed by absolute value, continuous dividend in %, progression rate over the absolute cash dividend
- The dividend models used for the pricing of equity forward can be assigned to a product type or on a specific criterion of instrument – three models are proposed:
- **Roll**: Last dividends over a period of one year are repeated with an annual frequency
- **Proportional**: Future dividends are calculated based on a proportion of the forward price
- **Mixed**: Mix of "roll" and "proportional", the ratio of proportional dividends increases linearly with time from zero to one between" start date" and "end date"

Front-to-back portfolio management and operations.

- ◤ **Real-time portfolio aggregating all positions**: Position keeping, hedging and P&L calculation with marked-to-market and theoretical prices
- ◤ **Distributed computations of the portfolio with risk analysis and real-time P&L breakdown**: Unrealized, realized, accrued, cash income
- ◤ **P&L attribution**: Real-time and EOD, spot effect, dividend effect, FX effect, volatility effect (with ATM and smile decomposition)
- ◤ Backdating capabilities for time-series analysis and reporting purposes
- ◤ Easy drilldown of the portfolio with on-the-fly aggregated reports by equity, FX, maturity, counterparty, underlying
- ◤ **Back office**
  - ◤ Confirmation and payment messages
  - ◤ Settlement instructions
  - ◤ Accounting, nostro management

Graphical user interface

Risk management

- ◤ Breakdown and aggregation of classical risk analytics: delta, gamma, vega, weighted vega, DV01, epsilon or repo sensitivity by currency, by strike bucket, by maturity buckets
- ◤ Other risk indicators available: theta, vanna, volga, dVegadTime, speed, zomma
- ◤ Split of index risk into component risk
- ◤ Stress test with volatility transformations
- ◤ Parametric, historical and Monte Carlo VaR with shocks on historical or implied volatilities
- ◤ Grid computing capabilities

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About Teciem

Teciem is a global provider of front-to-back treasury and capital markets software solutions, serving banks and financial institutions of all sizes. We deliver award-winning solutions for trading lifecycle and risk management, helping clients to operate seamlessly across asset classes and global markets. Built on decades of domain expertise, our solutions – Kondor, Summit, Opics, Sophis, Fusion Invest and Fusion Risk – are trusted by more than 340 financial institutions (and many of their subsidiaries) worldwide, including a majority of the top 100 global banks.

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