



We are facing the economic crisis of the century, which is also a crisis of confidence. Today more than ever, being part of the financial industry is a challenge whether you are a Banker or a customer.

To help you meet today's stringent market requirements, **CaMaRis** brings you 15 years of experience and expertise in the financial derivatives Industry. We insure that you will receive the same level of efficiency and satisfaction as any large bank trading floor when it comes to valuing your structured products portfolios – from vanilla to the most exotic products – and provide you with:

**An Independent Risk Manager Platform** with our own accurate and fair market data, customized report and audit trails.

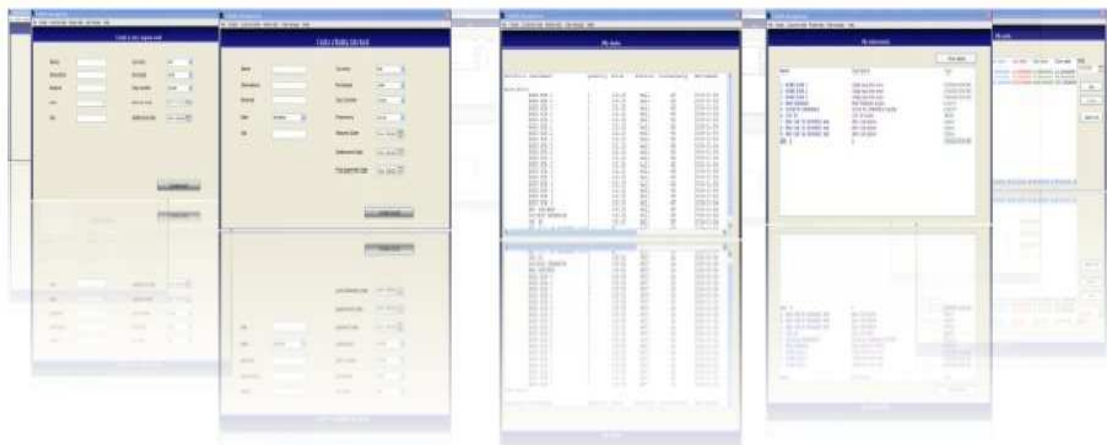
**Mark-to-market parameter estimators:** We use Numeric resolution of market prices, Historical estimators (Garch or Pearson + a spread that calibrates the market), and interbank consensus. We put forward a P&L explanation between these different data sources (reliability and various data convergence tests).

**Industrial Process:** CaMaRis can manage just under 1 million instruments in less than 1 hour.

**Continuous Computing:** All market parameters are updated instantaneously.

**All Risk Reporting:** Directional Greeks, Crossed Greeks Stress Test, P&L explain, VaR MC, Histo...

**All Assets:** Equity, Rate, Forex, Mono/Multi Underlying, Mono/Multi Barrier...

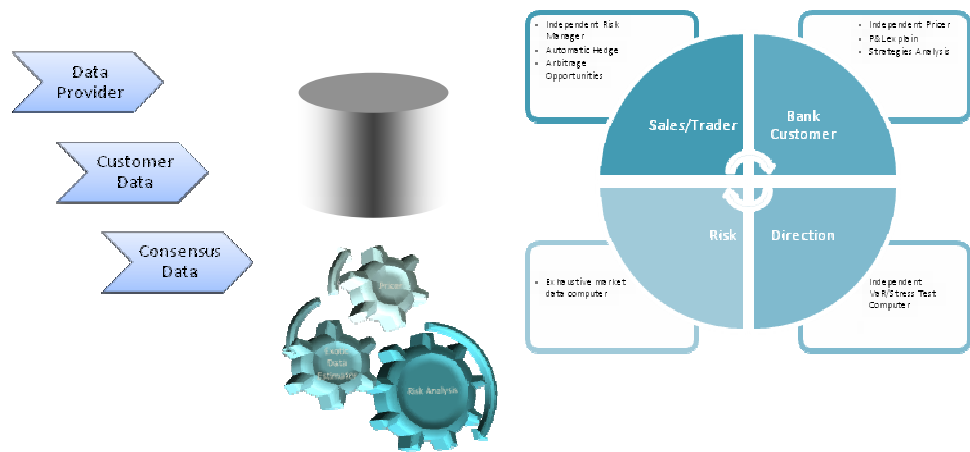




**Project Framework:** CaMaRis offers independent Risk Manager solutions for derivative and structured products.

**Economical Framework:** We are facing the economic crisis of the century, which is particularly a crisis of confidence: derivatives' prices diverge up to 50% from one contributor to another, 80% of the world's wealth is in the form of derivatives and the banks suffer 25 years of assets depreciation. To price a structured financial instrument we need to mark several parameters including volatility and correlation.

*We notice that the increasing important sensitivity of the instrument prices depends on the following risk factors: forex volatility and rates. They behave like the volatilities of liquid stocks, which can reach 30 or 40 %.*



### Added Values:

-> Introduce solutions to estimate market parameters (volatility, correlation).

### 4 Ways of proceeding

- *Numeric resolution of market prices (implying parameters from mono directional products) -> Anticipate the market.*
- *Historical estimators (Garch or Pearson + a spread that calibrates the market).*
- *Interbank consensus.*
- *Direct checking of the market data from the common suppliers (Bloomberg, Reuters, Telekurs...).*

*Therefore, we not only price the financial instruments by using the previously specified data sources or those of the client, but also put forward a P&L explanation between these different data sources (reliability and various data convergence tests).*



**Technical Framework:** The need for some services necessary to ensure a better risk management.

- > Significant spreads between model and market prices.
- > No method available for all underlings.
- > More and more parameters to mark while we had insufficient tools
- > Certain parameters infrequently updated, even marked once a year without a real estimate methodology.
- > Illiquidity which made non observable parameters too difficult to mark and to hedge.

FIGURE 1. The implied volatility surface for S&P 500 index options as a function of strike level and time to expiration on September 27, 1995.

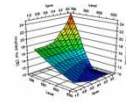
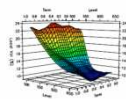


FIGURE 5. The local volatility surface corresponding to the implied volatility of Figure 1.



*Urgent needs for mark-to-market parameters obtained in a clear, reliable, continuous and industrial way that makes the prices converge to the market ones. It is also necessary to compute a Mid-Market adjustment provision and a Bid-Offer adjustment provision because of illiquidity.*

### Technical Problems

- > Lack of liquidity and new quotations => use of interpolation and beta-mapping.
- > Conflicts between data and prices calculators (need for a correlation matrix SDP).
- > Reduction of the computing number (for VaR, Stress Tests...): parallelism, degraded methods, memorization, estimators parameters reduction...

### Values Added:

- > Introducing **arbitrage strategies**.  
E.g. By comparing implicit correlation with the pure implicit one, we can arbitrate between an index option and a basket composed of the index option.
- > **Bid and ask prices**: separate the purchase price and the sale price.
- > Offering a **solution that is industrial** (management of millions of data), continuous (Real-time estimators), homogeneous (same models) in order to make the process auditable, reliable and transparent, thus eliminating the operational risks.
- > Offering **risk indicators ( VaR, Stress Test, P&L explain)** in an industrial and continuous way, from the 5 data sources specified previously with coherence tests.
- > Providing a flexible system of **provision computing**.
- > Having a record of market data and historically calculated results.

