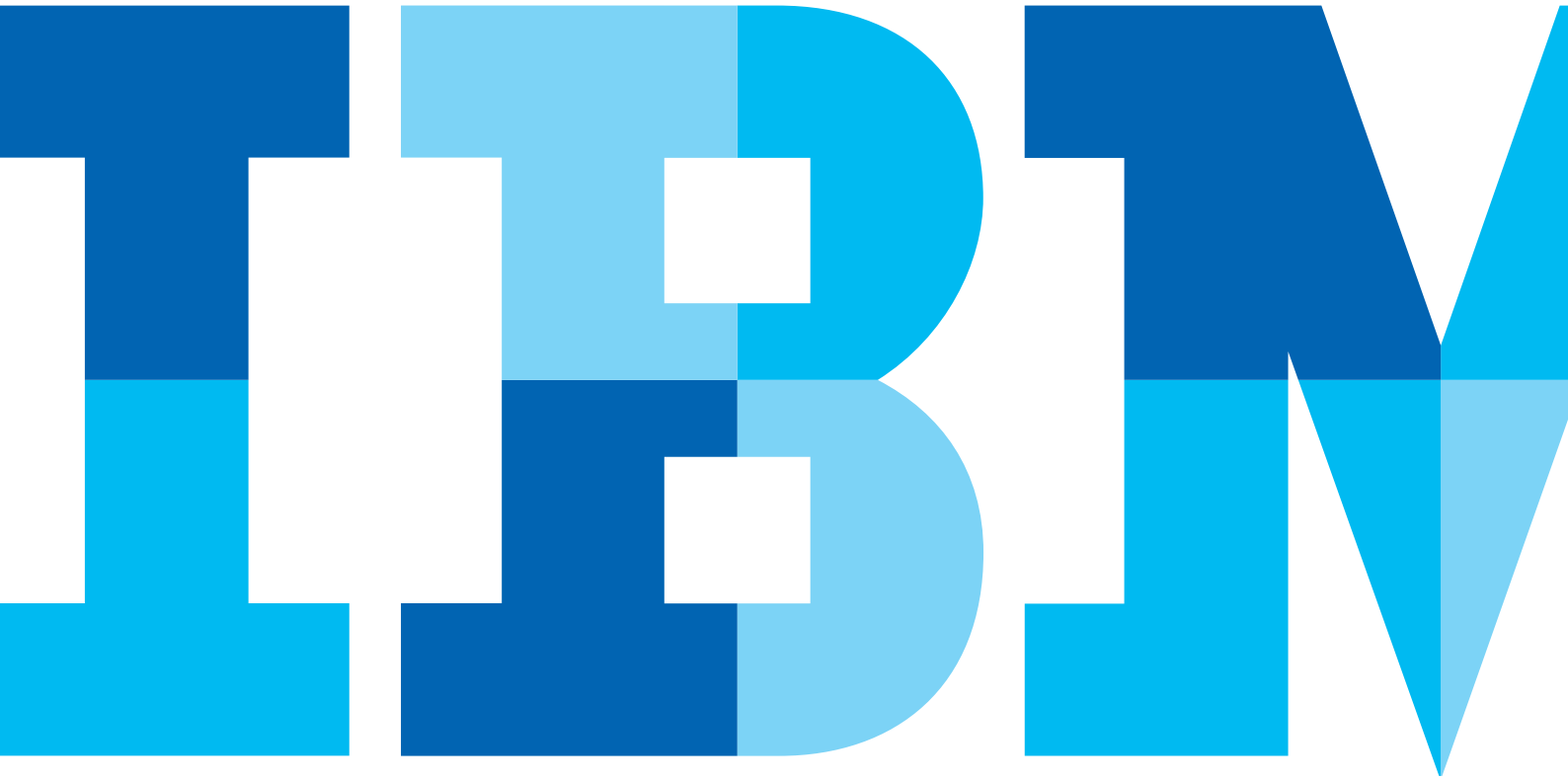


IBM Solution Brief



Risk Scenario Analytics

The **Risk Scenario Analytics** solution combines state-of-the-art business intelligence and information management technologies from IBM, with the advanced risk analytics and algorithms from R² Financial Technologies. The joint solution is a robust risk management offering designed to help organizations manage financial risks and address regulatory requirements. As one of the industry’s first integrated risk intelligence solutions, the **Risk Scenario Analytics** solution addresses your risk assessment and reporting needs in a consistent, transparent, extensible, and secure manner. The **Risk Scenario Analytics** solution includes modules to measure, monitor and report the Incremental Risk Charge (IRC) in the trading book, Counterparty Credit Risk (CCR) and Credit Valuation Adjustment (CVA), Economic Capital (EC) Allocation and Risk Aggregation.

1. Introduction

Greater transparency requires:

- Consistent, well documented, valuation and risk methodologies across asset classes;
- Detailed modeling of credit instruments and collateral;
- Assessment of counterparty credit risk and valuation;
- Measurement of concentration risk, both systematic and name concentrations;
- Explicit evaluation of model risk;
- Robust stress testing approaches;
- Explicit modeling of the interaction of market, credit risk and liquidity risk;
- Consistent measurement and reconciliation of economic capital and regulatory requirements;
- An integrated view of risks across various levels of the firm.

Two recent reports by the Senior Supervisors Group¹ identified four firm-wide risk management practices that differentiated those organizations that performed better during the crisis:

1. Effective firm-wide risk identification and analysis;
2. Consistent application of independent and rigorous valuation practices across the firm;
3. Effective management of funding liquidity, capital and the balance sheet; and
4. Informative and responsive risk measurement and management reporting.

Implementing these practices comprehensively across an organization generally requires considerable resources, expertise, and the right information technology infrastructure. The **Risk Scenario Analytics** solution builds upon your existing risk management infrastructure to bring the right risk data to the various stakeholders for the right analytics with utmost quality and transparency.

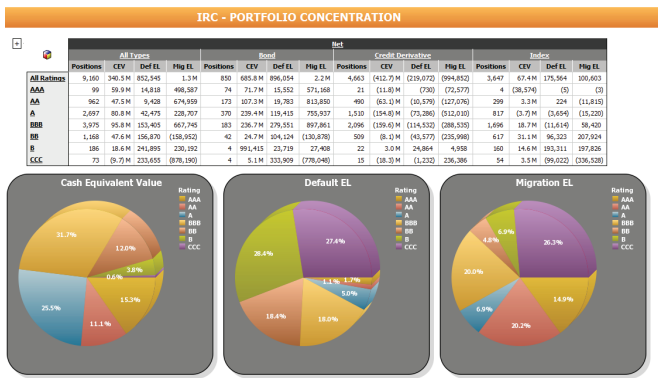


Figure 1. Sample solution dashboards


¹ Senior Supervisors Group (2008), “Observations on Risk Management Practices during the Recent Market Turbulence” Senior Supervisors Group (2009), “Risk Management Lessons from the Global Banking Crisis of 2008”

“...We seek to raise awareness of the continuing weaknesses in risk management practice across the industry and to evaluate critically firms’ efforts to address these weaknesses...”

—SENIOR SUPERVISORS GROUP, “Risk Management Lessons from the Global Banking Crisis of 2008”, October 2009

2. IBM + R² = Risk Scenario Analytics

Managing risk and performance requires more than just risk reporting. Financial institutions need a framework that integrates high quality risk data consolidated from a diversity of sources, risk engines and easy to use end-user analytics and reporting platforms to provide seamless self service analysis capabilities.

 IBM and R² Financial Technologies (www.r2-financial.com) have teamed to bring to you Risk Scenario Analytics – a risk intelligence solution, which integrates best-of-breed data management, advanced risk analytics and business intelligence tools in the market, to provide the utmost transparency and flexibility for business users in the middle and front offices.

The Risk Scenario Analytics solution is based on the IBM Banking Industry Framework for Integrated Risk Management and efficiently integrates the following capabilities:

1. R² advanced valuation and risk analytics engines, content and workflow components and content-driven reports, together with its vast experience and deep financial engineering knowledge in valuing illiquid securities, enterprise risk management, economic capital, credit risk and Basel II.

2. IBM Cognos software, a robust business intelligence and financial performance management platform that can leverage multiple data sources including banking data warehouse models, and includes best practice analysis, reporting, dashboards / scorecards, alerting and ‘what if’ capabilities and templates.
3. IBM InfoSphere data management middleware that collects and stores data pertaining to portfolio, instrument, position, and reference market prices and rates, from internal and external sources. A cohesive series of linked data models (from business level definitions to physical database tables), improve the quality of your risk data by linking related data together, and reduce the time and the cost of your risk solution deployment.

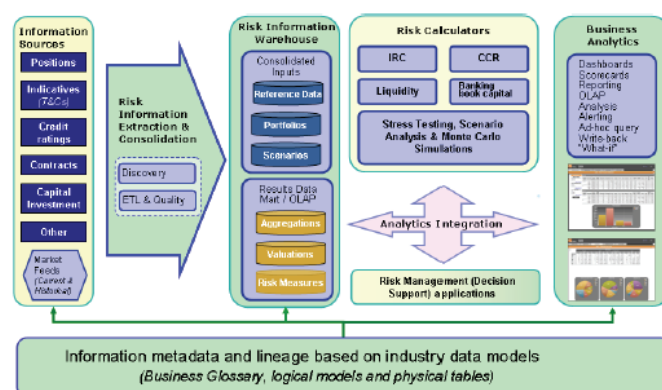


Figure 2. IBM Integrated Risk Management Framework – logical architecture

3. Capabilities

The **Risk Scenario Analytics** solution provides comprehensive risk analytics, reporting and data management capabilities, including:

Valuation and risk analytics engines:

- Comprehensive methods for valuation and sensitivities
- Complete coverage of credit instruments including bonds, structured finance and credit derivatives, MBS/ABSs and CDOs, and equities,
- Advanced stress testing and scenario analytics
- Multi-factor Monte Carlo simulation methods
- Economic and regulatory capital
- Capital allocation methodologies
- Advanced Portfolio credit risk and capital aggregation
- Counterparty credit risk measures and credit value adjustment (CVA)

Risk visualization, analysis & reporting

- Pre-built templates for risk dashboards and reporting that enable easy ad hoc reporting
- Risk contributions and performance attribution reports
- Aggregation of risk and financial data from multiple sources
- Self service reporting, analysis and risk sandbox capabilities
- ‘What if’ scenario analysis
- Capabilities to perform KPI score-carding, alerts, mobile integration and Office integration

Risk data management:

- Data mart for risk data
- Risk data models – Business vocabulary, reporting requirements related models, logical data models, physical models (database tables)
- Data quality management tools
- Metadata management tools to trace data lineage
- ETL tools for data sources interfacing

4. Business benefits

The **Risk Scenario Analytics** solution benefits include:

1. State of the art risk modelling
 - Comprehensive valuation and risk analyses
 - Advanced stress testing and scenario analytics
 - Model risk framework
2. Robust, efficient risk and capital reporting, dashboards and scorecards for board, senior management, risk managers and regulators
 - Aggregates risk information from multiple data sources and systems and provides an on demand, personalized view for each stakeholder in the format they prefer – online, spreadsheets, PDFs or on smartphones.
 - Visualization of market and credit risks, including sensitivities and concentrations
3. Single enterprise-wide source of trusted risk data with verifiable lineage, picked for their significance from multiple internal and external sources, shared by multiple stakeholders like CFO, CRO, Lines of Business, etc.
 - Lower cost of risk data management and better relevance to stakeholders due to shared/collaborative effort across the various stakeholders
 - Reduced chances of ‘Garbage-in garbage-out’ risk measures as multiple stakeholders watch over the incoming data quality
 - Increased transparency thanks to data lineage traceability
 - Consistent information used for risk analysis by all stakeholders
4. Improved productivity, enhanced focus on business issues, and reduced operational risk
 - Integration and reconciliation of multiple data sources
 - Easy to integrate, lightweight risk calculation and reporting engines, which leverage an existing risk infrastructure
 - Workflow and functionally driven integration
 - Auditing and surveillance capabilities, on-going validation, reconciliation

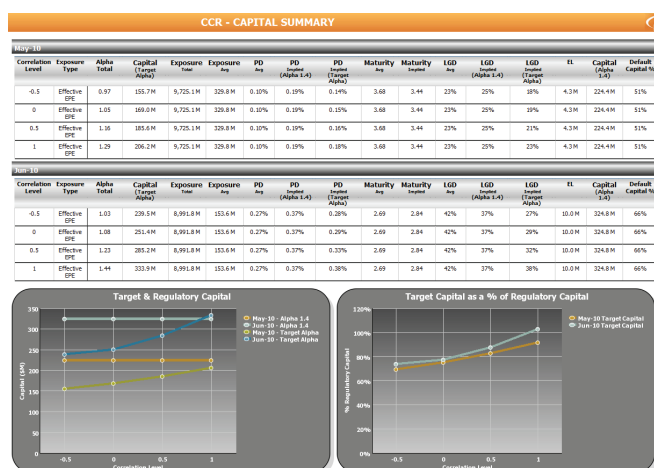
5. Business solutions

Designed to help you manage financial risks better and address regulatory requirements, the **Risk Scenario Analytics** solution addresses your risk scenario analysis & reporting needs in a consistent, transparent and secure manner, providing a combination of custom-tailored risk management reports and ad-hoc interactive aggregation, what-if analysis and reporting capabilities.

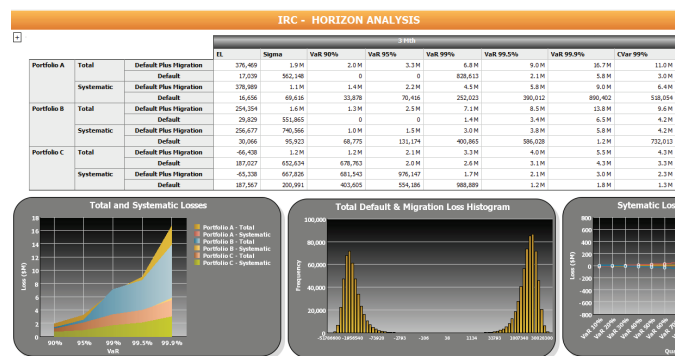
The **Risk Scenario Analytics** solution includes the following modules:

- Risk Scenario Analytics for Issuer Risk and IRC.** The Basel II Framework requires that banks using a VaR model to compute specific risk in the trading book also develop a methodology for measuring an incremental risk charge (IRC). IRC captures credit default and migration risks that are incremental to the risks captured by the market VaR calculation. The Basel committee expects banks to develop own internal IRC models and the fall-back option is very punitive. The new rules come into force from the end of 2010. Risk Scenario Analytics for IRC provides a comprehensive solution that integrates an advanced valuation and credit portfolio risk engine, which effectively covers the entire trading book credit activities, with an interactive dashboard providing comprehensive reporting and stress testing capabilities. In addition to custom-made reports for Risk Managers and Regulators, it allows users to drill down and understand the impact of correlations, concentration risk and liquidity.

- Risk Scenario Analytics for CCR Capital and CVA.** Accurately measuring and managing a portfolio's counterparty credit risk (CCR) is very challenging, requiring the stochastic nature of counterparty exposures, as well as the dependence between exposures and counterparty defaults, to be captured accurately. From a regulatory perspective, the Basel II Accord allows banks to use internal models to compute CCR capital requirements, based on the concepts of expected positive exposure (EPE) and the alpha multiplier. In addition, financial institutions must value their derivatives portfolios incorporating the possibility of losses due to counterparty default.

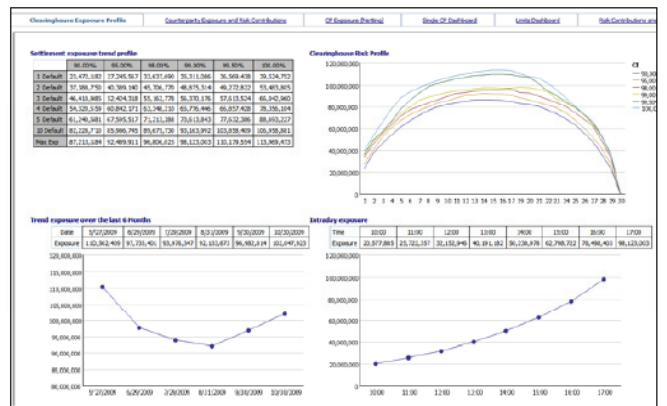
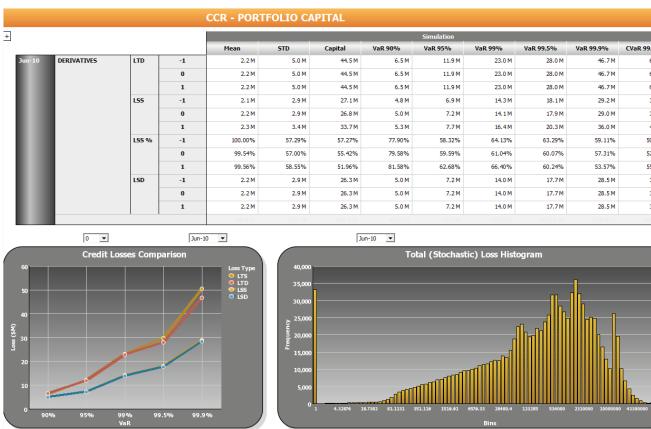


The credit valuation adjustment (CVA) is the market value of this counterparty credit risk. Risk Scenario Analytics for CCR Capital and CVA provides a powerful solution for computing and allocating CVA, as well as for measuring CCR economic capital. In particular, it also provides comprehensive stress testing capabilities, as well as a unique framework to model effectively wrong-way risk.



- Risk Scenario Analytics for Enterprise Economic Capital Risk Aggregation.** In order to manage their financial risks, financial institutions have typically implemented various separate market, credit and operational risk measurement tools, through various vendors and internal developments. Risk Scenario Analytics for EEC Risk Aggregation provides an enterprise risk management framework for viewing and managing financial risk in an integrated way across the firm. By leveraging existing systems and infrastructure and adding advanced EC analytics, the solution delivers powerful capital allocation and decision support tools for senior management, based on a single, integrated view of risks and reward across the entire firm.

- Risk Scenario Analytics for Margins and Settlement Risk.** This module enables clearing houses and brokers to measure and manage their global settlement risk exposure in a real-time basis using advanced Monte-Carlo methods. The solution includes the ability to measure risk contributions across a number of dynamic dimensions including trading counterparties, asset types, and settlement periods. Risk contributions, which reflect the true economic contribution of each clearing member, are then used to measure the amount of collateral that needs to be posted by each member. A powerful real-time reporting interface allows the production of comprehensive risk reports, trend profiles, and exception reports to draw management's attention to the areas of concerns.





6. For more information

If you are interested in learning more about this solution or scheduling a demonstration, please contact your IBM representative or the individuals below:

- Manoj Kumar: manoj1@us.ibm.com
- Philippe Rouanet: sales@r2-financial.com

Additionally, you can learn more about IBM and R² Financial Technologies risk management capabilities on the following websites:

- <http://www-01.ibm.com/software/industry/banking>
- <http://www.ibm.com/cognos/banking>
- <http://www.r2-financial.com/solutions>

About IBM Business Analytics

IBM Business Analytics software delivers complete, consistent and accurate information that decision-makers trust to improve business performance. A comprehensive portfolio of [business intelligence](#), [advanced analytics](#), [financial performance and strategy management](#) and [analytic applications](#) gives you clear, immediate and actionable insights into current performance and the ability to predict future outcomes.

Combined with rich industry solutions, proven practices and professional services, organizations of every size can drive the highest IT productivity and deliver better results.

For more information

For further information or to reach a representative:
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To request a call or to ask a question, go to ibm.com/cognos/contactus. An IBM Cognos representative will respond to your enquiry within two business days.

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