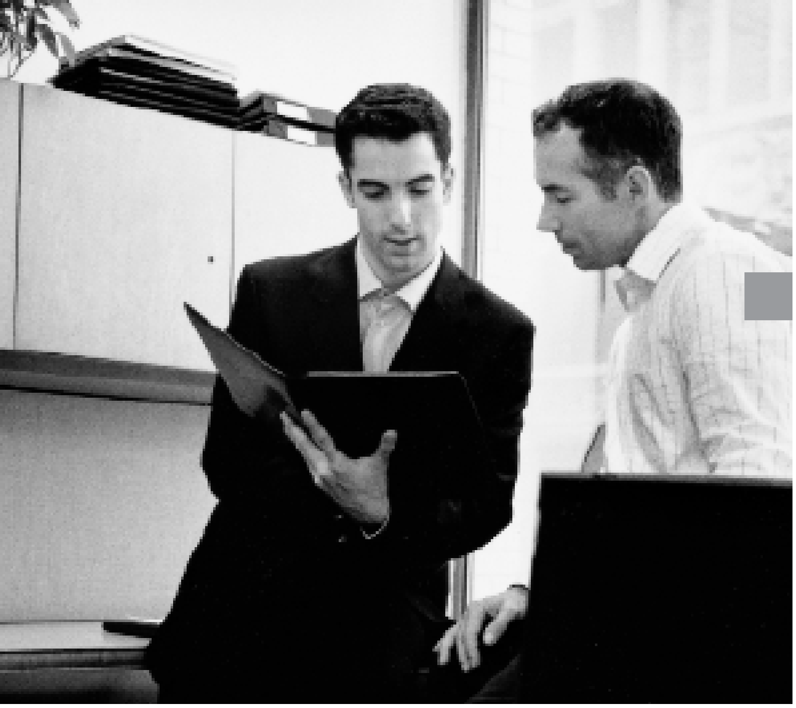

SAP White Paper

BUILDING A BUSINESS CASE FOR BASEL II

THE BEST-RUN BUSINESSES RUN SAP™

CONTRIBUTORS

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EXECUTIVE SUMMARY

Ongoing regulatory changes such as Basel II are intertwining the processes banks use to manage the finance and risk areas of their business. Successful banks will use new compliance requirements to create a stronger, more integrated finance- and risk-management platform that they can then leverage for a broad range of business goals. Banks that move in this direction can expect a more rapid ROI through greater operational efficiency, improved profitability, and higher share prices. The ideal Basel II solution provides a standard, open platform for a centralized, enterprise-wide risk and financial management system that is process oriented and can be customized to a bank's specific needs. The SAP® Basel II application and other SAP for Banking solutions can be key building blocks in a bank's transformation to operating an integrated platform for risk and financial management.

BUILDING A BETTER RISK-MANAGEMENT FRAMEWORK

Strong competition and greater product diversity and complexity have made effective risk management more critical than ever for banks. Increasingly, business performance is measured on a risk-adjusted basis. At the same time, a growing level of scrutiny from shareholders and other stakeholders has put pressure on banks to ramp up their investment in sophisticated risk-management systems. Advanced systems are needed to provide the information that is necessary for complying with risk-related regulations such Basel II. Investments in systems can and should be leveraged further to increase shareholder value.

A recent study by *McKinsey Quarterly* shows that stronger risk management under Basel II could raise pretax earnings of banks by 3% to 6%. Other studies show additional potential for improving corporate performance among banks with superior risk-management programs:

- A poll of U.S. banks participating in a June 2005 Webinar sponsored by SAP and Accenture shows that 92% feel their senior managers see a link between risk management and shareholder value. Of the same group, 84% feel it would be worthwhile to invest in the advanced risk-management practices and analytics required by Basel II even if their banks do not see any actual reduction in capital.
- A 2001 survey by The Economist Intelligence and MMC Enterprise Risk of 40 companies in North America, Asia, and Europe[1] shows that 84% of senior bank executives see paybacks in the form of a reduced cost of capital and higher price/earnings ratios.
- A 2002 study by ERisk,[2] a U.S.-based provider of enterprise risk-management solutions, found that banks that published risk-adjusted returns in their annual reports enjoyed an average increase in their share prices of 11.3% over the following four quarters. The study found a 7.6% share-price increase for non-reporting institutions.

To reap such benefits, better-performing banks have shifted from passive risk-management practices to active strategies that support a broad range of business initiatives. Increasingly, banks view their risk-management departments as partners in the strategic-management process and in decision making for capital allocation, budgeting, and structuring. At the same time, many banks are using the risk-management investments they make to comply with regulations such as Basel II for other business areas, such as finance.

1) The Economist Intelligence and MMC Enterprise Risk, "Enterprise Risk Management: Implementing New Solutions," 2001

2) ERisk, Curtis Tange, "Economic Capital Banks Survey Methodology," 2002

The importance of this development is evident in results of a study sponsored by SAP, Accenture, and Mercer Oliver Wyman and conducted by *The Financial Times*. An initial survey in 2004 showed that banks expect Basel II compliance to improve capital allocation, enhance market perception, and increase the use of risk-based pricing. However, a follow-up in July 2005 showed that the 63 banks involved in the survey had become more skeptical about whether their capital positions would radically improve as the regulations are phased in. The banks were concerned about the substantial costs they were incurring as implementation of Basel II technology proceeded. These results indicate the need to spend funds committed to Basel II wisely and to reap maximum business benefits from those expenditures.

Leveraging Basel II investments for broader business goals could soon be key to a bank's success in this competitive marketplace. "By 2007, banks that don't establish integrated enterprise risk-management capabilities will lose customers, increase capital costs, and decrease credit ratings, compared to competitors that do," notes Douglas McKibben, research director for financial services at Gartner.[3]

"Effective risk management requires standard processes and the reuse of data across a company," according to McKibben. "If banks are to achieve operational efficiency and more responsive management capabilities, they must remove the barriers between various enterprise data initiatives."

While many banks have the components necessary for an enterprise risk-management program, these components are often duplicated among various business units. This inhibits information sharing and centralized corporate governance.

"The cumulative workload of ever-increasing regulatory compliance is forcing banks to take a strategic view of their data-storage architectures and is even causing some banks to review their core systems," according to Financial Insights, a research subsidiary of the international consulting firm IDC. A 2005 Financial Insights study[4] concludes that, "Ad hoc solutions for each project are no longer adequate. It will be important for banks to tackle the common elements of regulatory compliance coherently and take an enterprise view."

3) Gartner Inc., Douglas McKibben, "Prediction for 2005: Risk Management Will Boost Bank Performance," November 2004

4) Financial Insights, Simona Macellari, "Basel II: It All Depends on Where You Want to Get To," January 2005

BRINGING FINANCE AND RISK MANAGEMENT TOGETHER

Basel II, a revision of the capital adequacy framework established under the 1988 Basel Accord (Basel I), expands the guidelines that international banks must follow for risk management and the disclosure of risk calculations. The Basel II guidelines cover three primary areas: minimum capital requirements, a supervisory-review process, and market discipline.

The capital requirements are intended to help banks improve the way they measure and manage risk. Under Basel II, a bank's minimum capital requirements line up more closely with the specific risks of different assets than was the case under Basel I. The supervisory review encourages best practices in risk management, including risk related to a bank's business strategy and reputation. Market discipline requirements necessitate detailed public disclosure of a bank's capital structure, risk exposure, ratings models, and capital adequacies.

Although Basel II focuses on risk management for internationally active banks, its principles are applicable for banks of varying levels of complexity and sophistication. Many national banking authorities may eventually mandate similar principles. The primary objectives of Basel II are to:

- Encourage a more comprehensive approach to managing risk, based on best practices and banks' internal ratings systems
- Maintain the current overall level of capital in the banking system
- Make capital requirements more sensitive to risk and business differences
- Improve risk transparency and disclosure
- Promote safety and soundness in the financial system
- Further enhance industry competition

Under Basel II, the rules for determining minimum capital requirements for market risk remain unchanged. The new framework revises calculations of risk-weighted assets for credit risk, however, and adds capital requirements for operational risk. Basel II also prescribes various methods for determining credit risk and minimal capital requirements for bank portfolios. These include a standardized approach, a foundation internal-rating-based (IRB) approach, and an advanced IRB approach. Basel II compliance supports an economic capital framework that takes into account the broader requirements for economic profit and risk-adjusted return on capital (RAROC).

Enhancing Business Processes and Decision Making

Basel II has become the catalyst for adopting the best practices in risk management that result in better risk/reward choices. While spending on IT investments for compliance with Basel II may rise over the next few years, banks should see reductions in operational costs, operational losses, credit losses, and regulatory penalties – in addition to net savings in capital requirements. By demanding stronger business processes and decision making for risk management, as well as better data integrity, Basel II is hastening integration of the traditionally separate worlds of risk and financial management.

The need to synchronize processes for management accounting, financial accounting, internal risk management, and regulatory reporting stems from a broad range of regulatory initiatives. Basel II requires the consistent measurement of both internal and external risk and the application of those results in managing internal performance. Under the U.S. Sarbanes-Oxley Act, banks must create a high-quality, transparent process for disclosing risk and financial information to the public.

Meanwhile, new approaches for risk-adjusted performance measurement require tools for managing portfolio risk consistently over time. Changes in procedures under the U.S. generally accepted accounting principles (GAAP) and the new international accounting standards and international financial reporting standards (IAS/IFRS) are also bringing financial and management accounting processes together.

All of these initiatives seek greater accountability and transparency by strengthening the processes for finance, accounting, risk, and performance management. Until recently, however, regulatory compliance has often been tactical - resulting in information silos fragmented by business, product, and location. These silos, in turn, have been responsible for substantial inefficiencies, a loss of data integrity, and high operational costs – as well as compliance-related penalties and fines. With consolidated, enterprise-wide control of its finance and risk activities, a bank can address the new regulatory environment more effectively. Such control requires greater effectiveness in capturing, analyzing, managing, safeguarding, and reporting data.

Banks that make this commitment can move beyond compliance and capital protection to capital development, improved profitability, greater strategic advantage, and increased shareholder value. By addressing compliance requirements with an enterprise-wide risk management program, banks can enjoy:

- Increased cost savings from data integration
- Increased process and operational efficiency due to reductions in duplicated efforts and non-value-added activities
- A reduction in operational losses
- Higher return on equity from enhanced analytics and risk-based pricing
- Improved reporting and disclosure
- Lower total cost of ownership for compliance-related investments

These benefits can significantly improve a bank's profitability. Research by Accenture estimates that a bank with $200 billion in assets, book capital of $16 billion, annual finance and risk IT costs of $160 million, and annual finance and risk operational costs of $100 million can net as much as $26 million in costs for finance and risk IT systems and support over seven years. These savings are realized by eliminating redundant databases and systems, reducing data storage and IT support personnel, and eliminating multiple applications. By aligning its finance and risk operations, a bank could save another $28 million over seven years from reduced operating costs that result from cross-training, shared compliance-reporting services, reduced reconciliation and remediation efforts, and shared processes that create a "single version of the truth."

The migration of data analysis and reporting of financial and risk results to a shared-services center offers potential benefits such as:

- Improved consistency of analytics and reporting
- Streamlined processes for financial and risk management
- Enhanced integrity for performance measures

The Big Payoff: Improved Business Analytics

Greater staff integration and more efficient systems and architecture, however, are just the tip of the benefits iceberg. These improvements will lay the foundation for the most significant payback: the implementation of improved business analytics across the enterprise that can deliver up to a 4% return on equity and an enhanced return on assets. For the hypothetical bank with $200 billion in assets, according to Accenture, the net potential benefit could be upwards of $265 million.

Shared processes for financial analysis can be embedded throughout the bank, providing enriched economic capital and profitability information to decision makers at all levels. Economic capital, in line with Basel II regulatory calculations, can be used to eliminate book capital not required for strategic actions. Additionally, the integration of finance and risk processes will provide real-time updates of performance calculations to support active portfolio management and risk-based pricing using management accounting data to measure potential RAROC and actual results.

Here is a closer look at these benefits:

Improved capital management. Improved capital management is the essence of Basel II compliance. Banks will gradually reduce or reallocate excess book capital based on a bottom-up approach to loss measurement that is driven by economic capital. By implementing Basel II's advanced capital-measurement approaches for credit, market, and operational risk – and recognizing expected and unexpected loss at a customer-account level – banks could net 175 to 200 basis points on current book equity, according to Accenture estimates.

Active portfolio management. Basel II compliance can also give portfolio managers the accurate risk and profitability information they need for setting pricing and limits to exposures at the portfolio level across products and market segments. Active portfolio management can yield an estimated net benefit of 80 to 100 basis points on current book equity.

Risk-based pricing. Risk-based pricing is an underwriting method by which a bank estimates the amount of risk that a credit application contributes to the bank's global portfolio. This method can improve shareholder value quickly and substantially because it drives banks to differentiate pricing based on particular customer or market-segment characteristics. Risk-based pricing can also improve the performance-measurement process. Correct pricing can be leveraged to increase prices for certain market segments and eliminate value-destroying business. Banks that use risk-based pricing can net an estimated 70 to 80 basis points on current book equity.

Profitability reporting. Profitability reporting is another risk-based tool that, in line with the dictates of Basel II, can help banks allocate capital based on risk-adjusted measures. RAROC measures the expected and historical return on a transaction or portfolio on a risk-adjusted basis. Measuring profitability using RAROC can help banks decide where to reallocate capital and make other strategic decisions.

As risk and finance information technology architectures become more integrated to meet Basel II, financial institutions will make the most of new accounting standards, regulatory requirements, risk-measurement methods, and portfolio-management tools.

Building an Enterprise Risk-Management Framework

Effective enterprise-wide risk management makes it easier for banks to identify, measure, monitor, and manage credit, operational, market, and liquidity risk. It encompasses activities for all of a bank's products, lines of business, and locations. In other industries, systems for enterprise resource planning (ERP) have integrated and automated processes for managing financials, human resources, operations and logistics, and sales and marketing by providing a central information hub. Typically, however, such systems have not been able to address banks' specific needs for enterprise-wide risk management. This is particularly true for the valuation of financial instruments, which is key to both finance and risk management.

All too often, banks rely on best-of-breed solutions that distribute risk and finance information among various operational systems, ERP systems, and data warehouses. A significant reconciliation effort is needed to ensure the high degree of accuracy, auditability, and traceability that banks need to reduce the significant risk to their reputations and the severe financial repercussions associated with inaccurate information in these areas. A single source of information for finance and risk management is, therefore, highly desirable and cost effective.

"Although it is a best practice, coordination of data among risk segments and with other enterprise data initiatives has not been widely adopted by banks," says Gartner's McKibben. "A recent Gartner G2 survey of 97 U.S.-based banks of various sizes found that less than half coordinate operational-risk data activities with those for corporate performance management, only about one-third coordinated risk data activities with customer relationship management, and only 6% coordinate data initiatives with regulatory compliance.

“A fragmented silo approach to risk management has proven to be inadequate in an environment where investors and regulators seek greater transparency into company operations and greater accountability from senior management,” McKibben notes. “Moreover, customer demand for faster service response and complete solution sets that are tailored and packaged to their specific needs adds more pressure to topple organizational walls and free the data trapped inside.”

Poor coordination of finance and risk management can expose banks to operational inefficiency, the potential for regulatory noncompliance, and missed opportunities for growth. Banks that wish to remain effective and competitive in a fast-changing regulatory environment must create a different landscape. Most would benefit from a more strategic IT approach that makes high-quality information available for managing finance and risk whenever and wherever it is needed.

With a comprehensive, enterprise-wide risk-management framework, banks can centralize policies, procedures, processes, IT solutions, and operational infrastructures. Benefits from such a framework include real-time analytics, optimized economic capital, relationship pricing, and enterprise resilience. Banks achieve the transparency and open governance style that have become key factors for growth – particularly when making strategic commitments to new markets.

Such a framework cuts across enterprise strategies, business processes, applications, and IT infrastructure. It handles data warehousing, reporting, and modeling, as well as rules and transactions related to these areas by using a structure that suits a bank’s particular business priorities and processing needs. Enterprise strategies map to real-time processing architectures and straight-through processing flows to create capabilities that a bank can leverage well beyond its compliance needs. Data warehousing – a core structural requirement for Basel II compliance – can provide information for marketing, cross-selling, and risk-based pricing. Improvements in operational efficiency can support faster product delivery.

THE IDEAL BASEL II SOLUTION

To leverage IT support for Basel II into a holistic framework for managing finance and risk, banks need a fully integrated approach to data management that includes:

- A standard platform that can support a central governance process and provide appropriate information granularity and consistency
- A process-based, enterprise-wide system that cuts across business lines, products, and geographies
- An open, component-based solution that supports in-house and third-party applications and can be configured to a bank's specific needs
- An easily configurable landscape that accommodates national differences in the implementation of international guidelines like Basel II, as well as differences in local regulations

Individual layers in the framework for data management, valuation, results, and reporting should support these objectives:

A comprehensive data-management layer. The foundation of this approach is a central repository that provides a common format for storing granular data at the transaction and contract level. Data models within the repository should be expandable to incorporate new types of information that Basel II, other regulatory initiatives, or various finance- and risk-management strategies may one day require. Because information for finance and risk management must be highly accurate, the data-management layer of the framework should incorporate strong internal controls with a broad range of checks and balances to assure data integrity.

A fully integrated valuation layer. Since Basel II analytics involve three risk dimensions (credit, market, and operational), the calculation and valuation layer of the ideal framework should provide sufficient openness to accommodate whatever combination of proprietary and third-party methods a bank chooses. It should also integrate all finance- and risk-valuation methods. In addition, this layer should include such best practices as versioning, auditability, and the capacity for drilling down into calculation components and source data for complete calculation transparency.

An open results layer. Openness is important in the results layer of the framework. Many banks store data in a variety of internal and third-party systems and may not be able to consolidate all these sources to a single system immediately. Such institutions need a central platform that can host and integrate multiple systems for an aggregated set of results.

A flexible reporting layer. Reporting capabilities, the fourth layer of the ideal framework, must be flexible enough to support both ad hoc reporting and the external disclosure requirements of regulations like Basel II.

LEVERAGING BASEL II COMPLIANCE WITH SAP FOR BANKING ANALYTICAL SOLUTIONS

Such a framework as described earlier can help banks centralize data management, reporting, and corporate governance. It can standardize processes and integrate operations, valuations, accounting, and analytics. It can enhance profitability by improving strategies for recognizing, evaluating, and handling risk across all business areas and by providing greater accuracy in profitability calculations for a bank's customers and products. By integrating finance and risk applications, the framework helps a bank manage its portfolio on a real risk/return basis. An integrated architecture also provides important information that a bank can leverage for customer segmentation and analysis.

For several years, SAP has worked with banking thought leaders to develop a powerful infrastructure for analytical banking that supports new regulatory challenges such as Basel II. Building on this infrastructure, SAP now offers a modular, fully integrated finance and risk architecture for analytical banking that can meet the enterprise-wide information needs of decision makers as well as essential requirements for portfolio and risk management. The benefits of this architecture include:

- Efficient, fast-track implementation
- Easy adaptability to new information requirements
- Transparent, sustainable support for information processing
- Improvements in information quality and consistency

The new analytical banking solution is powered by the SAP NetWeaver® platform, the open integration and application platform for all SAP solutions. It incorporates Enterprise Services Architecture, SAP's blueprint for service-based, enterprise-scale business solutions that support the enhanced adaptability, flexibility, and openness institutions need to reduce total cost of ownership.

The SAP Basel II application and other analytical applications within the SAP for Banking solution portfolio can help banks consolidate financial transactions at an event level to ensure consistency and clarity. These solutions integrate applications for finance and risk management to help banks control their portfolios on a real risk/return basis. In addition to helping banks meet relevant regulatory requirements, the solutions support strategies for handling profitability and risk throughout the enterprise. Real-time analytics within the solutions can help banks manage their products and customers.

Through the integrated finance and risk architecture, SAP Basel II helps banks align their regulatory capital measurements more closely with their internal risk-management practices and finance requirements. As the information needs of banks change, the modular and open architecture of the SAP for Banking analytical solutions helps institutions adapt quickly to new requirements. Open, standardized interfaces help banks efficiently integrate analytical engines from third parties.

The normalized data structure for storing and compiling all data for finance and risk management supports:

- Flexible combination of data from different sources
- The ability to maintain and manage complex financial instruments
- Multiple usage of data methods and results
- Pragmatic error handling with a correction server
- An internal versioning capacity
- Full audit functionality
- Proven reporting capabilities
- Openness that promotes communication with third-party tools
- Internal process monitoring and audit trails

With SAP Basel II and other SAP for Banking analytical applications, institutions can create a state-of-the-art framework for analytical banking. They can deploy the software either as specific support for Basel II or as a strategic platform for analytical banking. The applications provide complete transparency and traceability for all analytical processes and give banks a complete audit trail. Drawing from SAP's substantial experience in finance, which includes a strong heritage of internal controls, the applications provide a robust structure of checks and balances that assures a high level of data integrity.

SAP Basel II offers data models for all classes of products. It includes a financial database, which maintains current transactional and master data for analytical applications and functions, and a historical database, which stores data from internal models and other sources.

The financial database supports such analytics best practices as versioning, authorization management, and audit trails. In addition to predefined data configurations and templates, banks can use in-house or third-party data models. Such flexibility lets banks take advantage of best-of-breed solutions and use an evolutionary approach in migrating to a new integration infrastructure.

The historical database supports time-series analyses and the reporting and supervisory review processes required under Basel II. It provides an efficient underlying data infrastructure for a variety of internal credit-risk models and related processes such as model calibration, the estimation of credit parameters, and the validation of those parameters. Banks can structure the historical database according to their specific needs.

A third database,[5] the result database, stores the results from calculation runs – including results calculated by non-SAP systems.

5) The financial, historical, and result databases can run on one physical database.

The open platform of analytical solutions provided by SAP for Banking lets banks extract information from the source data layer to serve business needs beyond finance and risk management. In addition, banks can deliver results generated outside the SAP system to the results-data layer and use the results-data layer with non-SAP tools for decision support. They can also use non-SAP reporting tools in the reporting layer.

Basel II Features in SAP® for Banking

Business Process	Special Basel II Features
Calculations for credit, market, and operational risk and related capital requirements	■ Support for all types of credit risk, as well as various calculation methods and bank products ■ Specialized tools for standard and IRB calculation methods and for other cases such as specialized lending ■ Support for internal models estimating probability of default, loss-given default, and credit conversion factors – plus model validation and calibration ■ Single-transaction calculations for drill-down and detailed risk analysis on a daily basis, if required ■ Comprehensive historical database with generic architecture and extensible business content ■ Stress tests that explore the effect of changes in market data and other factors of a calculation ■ Capital-efficient distribution of collateral instruments through different optimization processes ■ Mapping of international requirements to calculation methods that reflect national requirements
Supervisory review	■ Internal reporting and disclosure through predefined reports ■ Support for reproducibility and versioning of data ■ Functions for drill-down and drill-through analysis
Disclosure and reporting	■ Standard reports that meet the requirements of Basel II ■ Significant flexibility in designing, creating, and expanding reports ■ Ability to publish information according to particular regulatory requirements

AN IMPORTANT STRATEGIC OPPORTUNITY

A solid IT foundation has become key to the risk and financial management transformation that many banks seek today. To be effective, this foundation must provide complete system integration that will centralize and streamline a bank's data-management and business processes to bring the strategies and activities for managing finance and risk closer together. The foundation must also be flexible enough to help the bank adapt to changing regulatory demands.

Such support can give banks the control and efficiency they need to reduce operational losses and costs. It can help banks improve profitability through strategies such as risk-based pricing. Industry leaders will see Basel II and other regulatory changes not as an administrative burden but as an important strategic opportunity for producing the information they need for stronger competitive advantage, greater market perception, and improved shareholder value.

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