Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

New-Age Portfolio Management Systems

Post-financial crisis, a holistic portfolio management function is mandatory for investment management firms to rebuild revenues, gain back client trust, and strengthen risk and operational controls.

People matter, results count.

Contents

1 Introduction

Portfolio management systems represent a US$2.4 billion market—and growing. **Portfolio management systems** or **portfolio systems** are defined as IT-enabled systems used by buy-side firms to manage client portfolios across different assets, geographies and clientele. These systems serve at the core of investment management firms hanging portfolios across the range of buy-side firms. These firms range from those managing mutual funds, hedge funds, and institutional accounts, to insurance and pensions. Portfolio management systems track portfolio performance, relative to benchmarks, sector breakdown, industry breakdown, and other daily and historical performance indicators.

The popularity of these systems can be tied to the increasing number of asset classes, diverse investment strategies, geographical diversity, rising population of high net worth individuals (HNWIs), the ever changing economic and financial environment, and the escalating demands of clients.

As the importance of portfolio management systems has risen over the past few years, investment and asset management firms are spending more on these solutions. Global fund assets that include pension funds, mutual funds, private banks and hedge funds, rose 16.3 percent in 2009 to US$69 trillion and are further expected to rise in 2010[1]. Keeping up with the growth in fund assets, the global technology spend on portfolio management systems has also grown steadily to US$2.4 billion in 2009 and is expected to reach almost US$2.6 billion by 2012[2].

The growing complexity of the wealth management industry has led buy-side firms to increasingly adopt new age portfolio systems to help bring out more efficiencies from their system, integrate their business process, and adopt a flexible technology architecture which can cater to ever-changing business requirements.

[1] Capgemini analysis
[2] Aite Group, LLC

2 After the Financial Crisis: IT Challenges for Buy-Side Firms

As the investment management industry tries to build a sustained recovery after the financial crisis, buy-side firms such as wealth managers, hedge funds, and mutual funds are facing numerous challenges in a fast-changing environment. Financial markets have become very dynamic with the emergence of new asset classes and services. The technology to support these new products and services has grown complex as standalone portfolio applications evolve into fully integrated front to back office suites. This movement towards integration raises issues around compatibility and efficiency.

Moreover, post-crisis, clients and regulators now demand more reporting and risk analytics. Together, these challenges mean portfolio systems for buy-side firms must address additional business requirements, increased technological complexity, and new regulatory and client demands.

2.1.1. Challenge #1: Increasing trading volumes

While trading volumes in both over-the-counter (OTC) and exchange traded derivatives have grown, clients have also become more accepting of derivatives and alternative asset classes. This is especially true in Asia Pacific where high net wealth increased by more than US$1.3 trillion (15 percent) from 2006 to 2009, and by US$1.1 trillion (12 percent) from 2009 to 2010 driven by strong economic growth and an overall increase in market capitalization[3].

2.1.2. Challenge #2: Increasing number of asset classes

The number of asset classes has increased over time bringing new equities, fixed income and alternative investments. These now cover a wide variety of investment categories including domestic and international equities, listed equity options, over-the-counter equity options, fixed income, foreign exchange, and futures. The alternative investment category consists of metals and agricultural commodities, real estate, oil, and currencies.

[3] World Wealth Report 2010 and 2011

2.1.3. Challenge #3: Wide range of services and trading features

Trading and portfolio systems have evolved to address the increasing number of services and functionalities. Today these systems include a variety of features to support:

- **Financial Processes:** Securities lending, portfolio accounting, general ledger, reporting
- **Regulatory Requirements:** International Finance Reporting Standards (IFRS), Markets in Financial Instruments Directive (MiFID) and Basel I and II
- **Calculations and Analysis:** Risk analytics, advanced risk calculation, what-if analysis, stress testing, performance measurement, Net Asset Value (NAV) calculation, data warehousing
- **Customer Service:** Client relationship management (CRM), commission tracking

Furthermore, in an environment characterized by declining margins and revenues, asset managers seek new ways to retain their clients by providing flexible systems that offer enhanced graphic displays, drill-down capability, and web-based reporting.

2.1.4. Challenge #4: Geographic diversification of assets

In the last few years, there has also been a marked increase in global high-frequency trading activity, as hedge funds and trading desks try to capitalize on low latency technology infrastructure (which rely on speed to gain miniscule advantages in arbitrage price discrepancies) to make money using specific trading patterns and spreads. In fact, by 2010, high-frequency trading accounted for about 70 percent of equity trades in the US, and was rapidly growing in Europe and Asia[4].

Today firms must execute investments through multiple channels for different clients. Buy-side firms need a portfolio management system that is agile and flexible to support the increased transaction volumes, trading features, geographies, and number of asset classes.

2.1.5. Challenge #5: Large number of vendors and product commoditization

There has been a proliferation of various standalone trade order management systems over the past few years, each built using a unique architecture, platform, database, and messaging system. Since development of an end-to-end trading platform is too complex and expensive, many buy-side firms opt for commercial off-the-shelf solutions rather than investing in customized applications. The variety and incompatibility of trading solutions has led to integration challenges when creating an end-to-end system for all types of asset classes.

[4] www.businessinsider.com

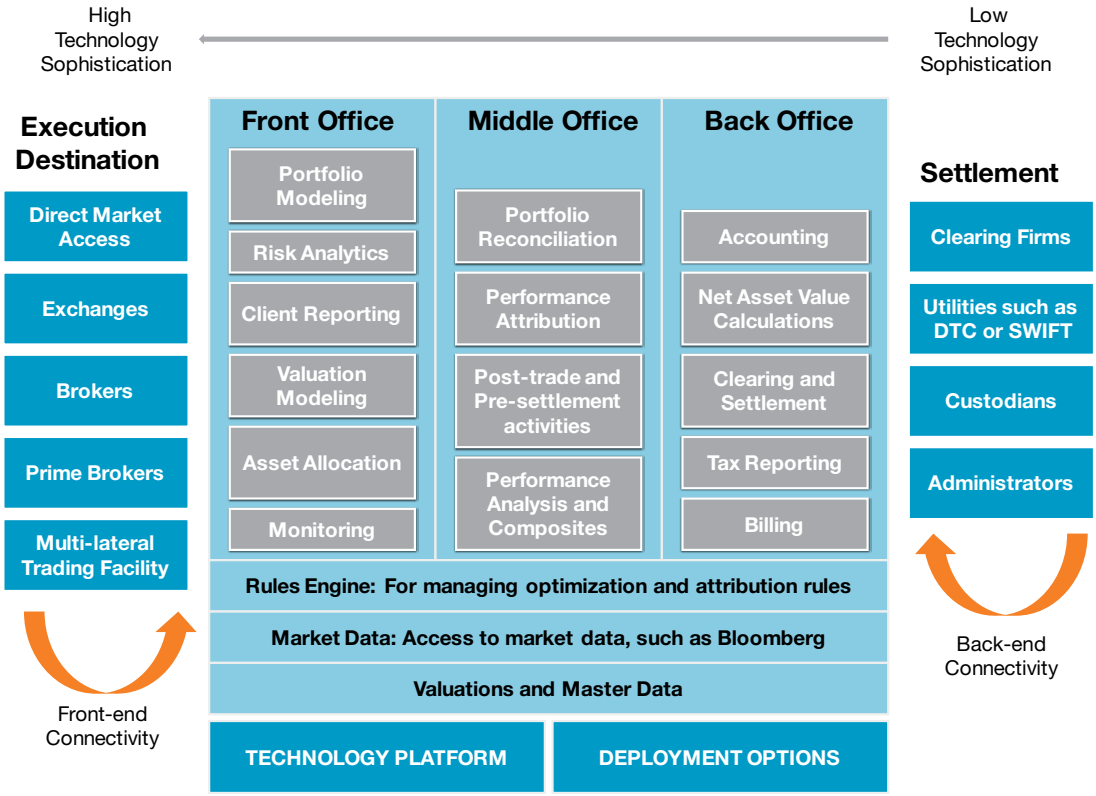
3 Portfolio Management Systems: Where Are We Today?

New-Age Portfolio Systems cover a broad array of functions ranging from transactional back office operations to highly sophisticated front office features.

The traditional function of portfolio management systems is to manage the transactional aspects of portfolios such as asset allocation, trading, settlement, and reporting. New-age portfolio systems cover a broader array of functions from back office operations (tax reporting and fund accounting) to highly sophisticated front office features such as risk analytics and valuation modeling.

A typical portfolio management suite comprises different modules across the front, middle, and back office (see Exhibit 1). Back office functions generally include basic transactional processing modules while front office has more sophisticated features such as valuation modeling and risk analytics.

Exhibit 1: Composition of Typical Integrated Portfolio Suite



Source: Capgemini Analysis, 2011

4 Architectural & Technical Complexity: A Deeper Look

Portfolio management and accounting systems are the core infrastructure for asset management firms. There are a number of commercial solutions available which cater to these portfolio management needs. The asset management industry has implemented a variety of systems, each with its own technical architecture, to address various new asset classes and regulatory requirements, build efficiency into the system, and create end-to-end functionality. The client needs for such systems are ever changing but key technical challenges include:

- Integrated systems in the form of a single technology platform for end-to-end processing
- Ability to scale up to process increasing number of asset classes
- Enhanced processing speed and efficiency of operations (processing, messaging, handling, and delivery)
- More client interfaces, tools and transparency

4.1. Technical Complexity

Typically, the functional architecture of a portfolio management system consists of front office, middleware, and back office sub-systems (see Exhibit 1). A comprehensive integrated portfolio system consists of a trade order management module integrated with business intelligence solutions, and various layers communicating through a messaging system.

4.1.1. Integrated portfolio suites

An integrated portfolio suite offers full front to back office capability to minimize integration requirements and can lower the time and costs to implement and maintain the system. A full suite provides a large number of functionalities and helps cater to a wide range of client needs while also saving on available resources.

Integrated portfolio suites also offer open, flexible methods of connectivity to accommodate third-party data providers and technology systems. Clients faced with both legacy systems and new services and technologies, such as risk analytics and derivatives systems, have found it helpful to first implement an integrated suite as the core infrastructure. The integrated suite is then used as a base to add new requirements to the system. Increasingly, the technology of portfolio management systems is moving towards .Net and Web Services to accommodate this shift.

4.1.2. Open architecture systems

To support integration flexibility into portfolio systems, investment management firms are moving towards open architecture. When combined with an industry standard workflow and integration toolset, an open architecture can process inbound files in all industry standard formats. This enables data within the system to be exported and transferred to external system in nearly all industry standard formats.

4.1.3. Component-based architecture

Because of the significant investment in developing a portfolio trading and management system, firms are moving towards component based technical architecture which incorporate ever changing trading and market structure environment. Such a modular approach provides for business agility in providing quick go-to-market solutions.

4.2. Architectural Complexity

The technical architecture of portfolio management systems makes use of a variety of databases (Microsoft SQL Server, Sybase, Oracle) and operating systems (Microsoft, Unix, Linux). The architecture usually consists of a three-tier component that can support multiple web, application, and report servers, in addition to database clustering. It makes use of a client-server based deployment built on a central, message-oriented middleware and distributed servers that can be installed on several machines.

4.2.1. Services oriented architecture

Increasingly, portfolio systems use a services-oriented architecture (SOA) to deliver a wide range of interoperable services that can be used within multiple, separate systems from several business domains. In case of a multi-tier or n-tier architecture, the main components usually include a trading platform, an application server, and desktop clients.

4.2.2. Internal messaging and connectivity

Portfolio management systems architecture also includes internal messaging and connectivity with third-party systems through a variety of APIs, XML, CSV, and flat files. Flat files are generally used where XML or SQL scripting functionality is not available. Messaging systems make use of APIs, XML messaging, FTP, HTTP sync, and industry solutions such as Microsoft MQ, Oracle Advanced Queuing, IBM, and Websphere MQ.

For integrating systems and modules and setting up a communication mechanism, there are at least two distinct architectural levels that portfolio systems use to implement a middleware messaging and data management system:

- **Enterprise data management (EDM):** centralized persistent data
- **Middleware messaging infrastructure:** a messaging network for moving data from application to application in real time

Real-time messaging is much more complex than EDM and requires its own infrastructure. A real-time messaging infrastructure enables applications and services to communicate with each other in a unified and controlled manner, ensuring that data is common and timely among applications.

5 Regulatory & Industry Complexity: A Changing Landscape

As a result of the financial crisis, the asset management industry has seen major changes between 2007 and 2009 in both regulatory requirements and industry standards.

5.1. Regulatory Imperatives

Since weaker regulations for the trading of derivatives and exotic products was a strong factor in the financial crisis, regulations now limit activities in these markets. There has been a paradigm shift towards transparency as investors and regulators require more information to be publicly released for financial institutions. In particular, capital markets firms have been under fire for secrecy in operations and reporting procedures as there are no statutory obligations to publicly disclose information about investment strategies. In many countries, a thorough review process has begun to strengthen the regulatory framework around these buy-side firms.

5.1.1. Algorithmic and high frequency trading

The growing levels of high-frequency trading serve as an example of how an unregulated environment gave rise to systemic risks in the financial markets. It was the automated strategies of high-frequency trading which prompted copying among hedge funds. This was seen as a major factor in exacerbated market upheavals during the financial crisis of 2007. Algorithmic and high-frequency trading were again both implicated in the May 6, 2010 Flash Crash[5] on Wall Street, when high frequency liquidity providers were found to have withdrawn from the market, leading to the largest intra-day point loss in the history of Dow Jones Industrial Average index.

Buy-side firms are now subject to increasing compliance and reporting requirements. Managing compliance and risk management has therefore become a challenging task, especially for firms with global reach since regulations are often country-specific.

[5] *Findings regarding the market events of May 6, 2010 : Report of the staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues*, September 30, 2010, www.sec.gov

5.1.2. Risk reporting, capital and liquidity

While Global Investment Performance Standards (GIPS) remain the leading standards in performance reporting for investment management firms, regulations around risk reporting, liquidity and investments in derivatives are still a cause of concern for most buy-side firms. Often, technologies are siloed which adds complexity when assembling accurate, holistic risk reports to meet regulations. Future reviews are planned for regulations such as the Markets in Financial Instruments Directive (MiFID) that may continue to drive global standardization of trading procedures and systems.

International Financial Reporting Standards 8 (IFRS 8), Basel III, and Solvency II bring new compliance demands that will impact the business models of buy-side firms. IFRS 8 applies to both publicly traded funds such as mutual funds as well as private equity funds, and lays down disclosure requirements with respect to financial statements. Basel III and Solvency II will impose additional capital constraints on banks, insurers, and other financial service providers. Asset management firms may need to enhance capital productivity and raise necessary core Tier-1 capital through divestment and sale of minority stakes.

5.1.3. Derivatives

The over-the-counter derivatives market has gained back its momentum, recovering as the financial markets broadly improve. The Bank for International Settlements (BIS) reported that total notional amounts outstanding of over-the-counter derivatives touched $601 trillion by the end of December 2010, a minor decline of 0.5% over December 2009 levels, and signaling a return to pre-crisis levels[6].

Like other markets, derivatives is going through structural changes towards better transparency and more automated processing and monitoring, particularly because these contracts are complex, multi-party and at times, frequently traded. Buy-side firms must consider how to bring about the necessary regulatory, systemic and business changes, in order to gain back client trust and provide a better fit to client needs.

5.2. Client Demands

New-age portfolio management systems must meet demands from banks, brokers, hedge funds, asset managers, and insurance companies:

- **Banks** mainly deal with the risk control and risk transfer, such as interest rate risk, equity and commodity risk, and financial market risks.
- **Asset managers** need to boost client investment returns, hedge against portfolio devaluation, hedge currencies to client base currency, and invest short-term cash.
- **Hedge funds** must manage sufficient liquidity, hedge against portfolio devaluation, and mitigate financial market risks.
- **Insurance companies** need better risk management techniques and better portfolio management.

As regulatory oversight increases, portfolio management systems must address advanced risk analysis, over-the-counter derivatives handling and valuation modeling, prompting buy-side firms to install solutions to meet these client demands.

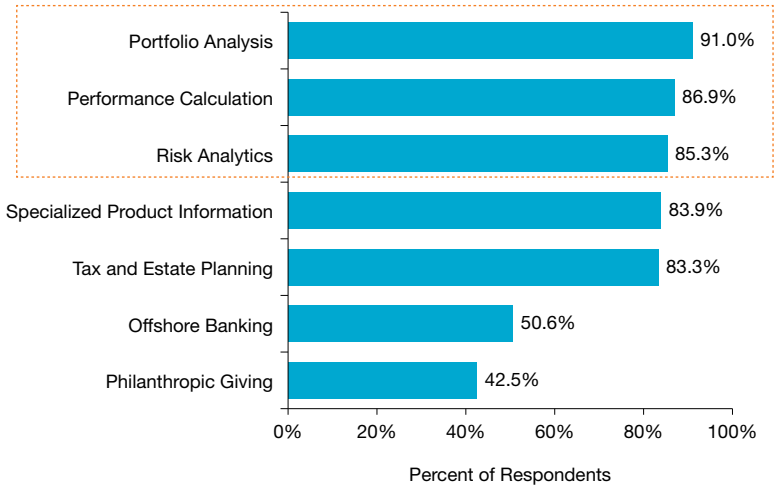
[6] BIS (Bank for International Settlements)

Around 98% of high net worth clients are demanding effective Portfolio Management from their advisors.

5.2.1. Client Reporting

Regulators are not the only voice calling for increased transparency and reporting from financial institutions. Coming out of the financial crisis, clients are more demanding about functionality and granularity in their periodic reports. In our 2010 Financial Advisor Survey, Capgemini and Merrill Lynch uncovered key areas of operations where HNW clients demand increasing specialization. Portfolio analysis, performance calculation and risk analytics emerged as the three most important areas where portfolio managers need to invest to win back client confidence (Exhibit 2).

Exhibit 2: Areas of Specialization Demanded by HNW Clients



Source: 2010 Capgemini Merrill Lynch Financial Advisor Survey

Around 98% of HNW clients are demanding effective portfolio management, while improved client reporting and specialized advice are also high-priorities[7]. Clients with improved technological sophistication are using the accessibility of electronic trading platforms to force service improvements. Ensuring proper risk reporting and improving the quality of services have become key priorities for buy-side firms.

[7] *World Wealth Report, 2010*

Emerging markets became more important than developed markets, particularly Asia-Pacific which moved from third to second largest region for HNWIs, surpassing Europe.

5.3. Industry Trends

The asset management industry has experienced major changes as a result of the financial crisis:

- Mergers and acquisitions increased as companies struggled to survive the market turmoil
- Emerging markets became more important than developed markets, particularly Asia-Pacific which moved from third to second largest region for high net worth individuals, surpassing Europe[8]
- The core business model of asset management firms is changing to better support resiliency and flexibility
- A strategic shift is occurring to improve advisor-facing and client-facing technologies
- To rebuild trust, firms are focusing on improving financial transparency and client reporting
- Use of trading platforms is increasing
- Exchange Traded Fund (ETF) products is rising globally
- To better understand client interests, wants and needs, firms are turning to social media

The coming years may present significant opportunities for the asset management industry, despite greater pressure and scrutiny from regulators. The faster economic growth of the emerging Asian and Middle East markets has led to a significant increase in the number of high net worth individuals looking for greater investment options. This presents new markets and opportunities for both wealth managers and buy-side firms to expand their presence in these regions.

The retail market is primed to become one of the fastest growing segments. To meet increasing demands among retail investors for outcome-oriented products, asset management firms must build risk management systems into their existing lineup of funds, while developing entirely new products and investment processes that do not adhere to traditional style categorizations. More fundamentally, firms may also have to determine both their willingness and ability to assume risk on behalf of retail investors.

Looking forward, multi-boutiques are likely to be the dominant operating model for medium and large asset managers as they provide more individualized client service and better meet growing client needs. Alignment of interests between fund manager and client will take center stage in the new age business model.

[8] *World Wealth Report, 2011*

6 Portfolio Management Systems: The Path Forward

A holistic portfolio management system needs to evaluate the business, technological, and market effectiveness of their current systems.

The new-age holistic portfolio management system will need to meet requirements for business effectiveness, technological effectiveness, and market effectiveness to allow asset management firms to stay competitive in the new financial and regulatory climate and better meet growing client needs. Asset management firms and their IT vendors must work together to identify and bridge gaps in existing systems and build an end-to-end integrated portfolio management suite.

6.1. Business Effectiveness

In order to address tighter regulatory requirements, Capgemini recommends asset management firms:

- Evaluate existing regulatory readiness and develop a risk management and compliance framework to address gaps
- Plan and implement risk analytics and scoring to produce accurate and forward looking risk scores
- Plan and execute portfolio systems legacy modernization to seamlessly integrate front, middle and back office operations
- Increase the configurability, agility and speed of technology architecture so future regulations can be quickly adopted to minimize penalties and business disruption
- Address industry-standard functions such as anti-money laundering (AML) checks and Bank Secrecy Act (BSA) reporting
- Enhance the accuracy and transparency of reporting; improve the frequency to both clients and regulators
- Reach new standards for reporting risk and performance
- Ensure compliance with region-specific regulations and new regulations related to derivative products

6.2. Technological Effectiveness

The business challenges addressed by new age portfolio management systems drive the technology imperatives. Capgemini recommends asset management firms:

- Continually upgrade technology platforms to support increasing transaction volumes
- Add middle office features to existing portfolio management systems such as portfolio performance measurement and attribution, which require advanced integration functionalities and rules engines due to the proliferation of non-traditional asset classes such as gold, derivatives, commodities and private equity
- Achieve quick connectivity to multiple exchanges and clearinghouses to support high-frequency trading and multiple trading venues
- Adopt agile technology architectures such as SOA to support a quick go-to-market strategy with new and enhanced products
- Select open architecture-based IT systems that are .NET and web enabled
- Implement EDM software to integrate applications and promote common data models throughout the portfolio system architecture
- Add standard middleware messaging and data management technology which can operate in a real-time trading environment
- Choose component-based architecture to support cost effective, agile technical solutions that can keep pace with the rapidly changing financial environment

6.3. Market Effectiveness

To respond to increasing client demands, Capgemini recommends buy-side firms:

- Implement rules-engines and exception handling for improved portfolio analysis and performance attribution
- Achieve the cost-benefit of a technological architecture that ensures enhanced product coverage, accurate reporting, advanced risk scoring and effective portfolio management
- Streamline solution workflow engines and improve user interfaces and connectivity to increase productivity
- Lower the overall cost of ownership through application service providers (ASPs) or outsourcing

As we've seen, clients have become increasingly demanding coming out of the financial crisis. Post-crisis, they are more likely to switch asset management firms if their expectations are not met, and reporting and portfolio management are key areas for this audience. Hedge-fund or a private banker, clients expect to receive improved reporting and portfolio management and better service tailored to individual needs.

7 Conclusion

Portfolio systems are at the heart of a buy-side firm's ability to ensure effective portfolio management. A holistic portfolio management function is mandatory for investment management firms to rebuild revenues, gain back client trust, and strengthen risk and operational controls. To avoid high investments in IT, asset management firms will need to improve consolidation, uniformity, and communications within sub-systems to achieve greater trading and operational efficiencies.

Increased compliance and regulatory requirements will put pressure on firms managing assets to go for multi-asset portfolio management systems.

Furthermore, the increasing compliance and regulatory requirements add pressure on firms operating portfolio systems to adopt a fast track route to highly automated systems and services. The growing number of asset classes has led asset management firms to select multi-asset portfolio management systems with integrated processes, tools and technology to improve the performance of their bottom-line and gain competitive advantage in a market in which the only constant is change.

Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

www.capgemini.com/wealth

About the Authors

Vaidyanath Ramaswamy is a Principal in Capgemini's Global Capital Markets practice and has over 25 years of experience in insurance and capital markets including 10 years with a large diversified stock exchange in India. Prior to joining Capgemini, Vaidyanath was Practice Head, Capital Markets for the consulting division of a leading multinational IT firm.

Rishi Yadav is a Senior Consultant in Capgemini's Strategic Analysis Group within the Global Financial Services Market Intelligence team. He has eight years of experience in strategy, business and technology consulting for financial services clients across banking, insurance and capital markets.

The authors would like to thank **David Wilson**, **William Sullivan** and **Bhushan Joshi** for their contributions to this publication.

About Capgemini and the Collaborative Business Experience

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies.

Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™.

The Group relies on its global delivery model called Rightshore®, which aims to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients.

Present in 40 countries, Capgemini reported 2010 global revenues of EUR 8.7 billion and employs around 112,000 people worldwide.

Capgemini's Global Financial Services Business Unit brings deep industry experience, innovative service offerings and next generation global delivery to serve the financial services industry.

With a network of 18,000 professionals serving over 900 clients worldwide, Capgemini collaborates with leading banks, insurers and capital market companies to deliver business and IT solutions and thought leadership which create tangible value.

For more information please visit **www.capgemini.com/financialservices**

Capgemini Financial Services
6400 Shafer Court,
Rosemont, Illinois 60018
Phone (847) 384 6100, Fax: (847) 384 0500