

TRADING TECHNOLOGY SOLUTIONS AND IMPLEMENTATION

TECHNOLOGY FOR TRADING FIRMS

Risk Advisors Inc. develops the technology strategy for hedge funds and other trading organizations necessary to deliver solutions to support the firm's business processes. The challenge when developing a technology plan is adapting to rapidly evolving business needs while balancing competing priorities. The goal is to build a robust, resilient, and scalable technology platform while ensuring solutions are delivered quickly, on-budget, and are easy to implement and support. Technology is a critical component of the investment and trading process, and all business groups require appropriate technology solutions to be effective.

We offer technology-related executive management, strategic planning, process re-engineering, and implementation project support through senior level technology and business operations consultants. Developing technology solutions requires us to consider the necessary data needs, the possible application options, and the required infrastructure to support proposed solutions.

RISK ADVISORS DELIVERS:

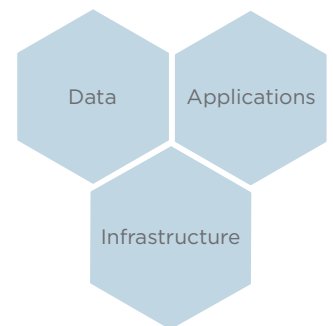
- » **Business Processes** - Understand the processes and technology solutions necessary for portfolio management, middle and back office processing, risk management, investor relations, and compliance
- » **Planning and Strategy** - Develop the tactics, planning, and strategy across technology functional areas to deliver on business goals
- » **Technology Assessment** - Collaborate with technology group to assess technology assets across data, applications, and infrastructure
- » **Implementable Solutions** - Provide options with benefits analysis to enable decision making and arriving at implementable solutions
- » **Industry Expertise** - Experience with prominent hedge funds and relationships with solution providers and vendors

OUR APPROACH TO TECHNOLOGY STRATEGY

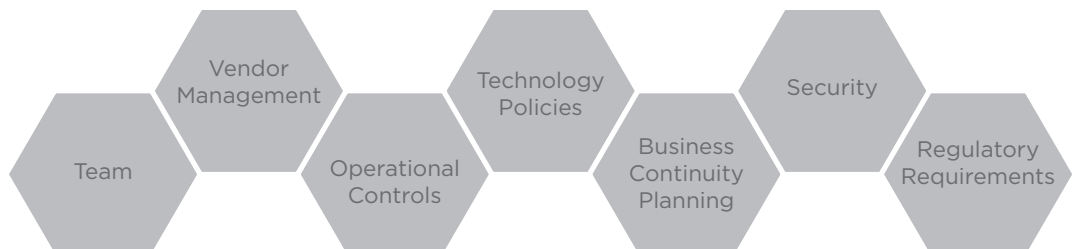
BUSINESS GROUPS



THREE TECHNOLOGY CATEGORIES

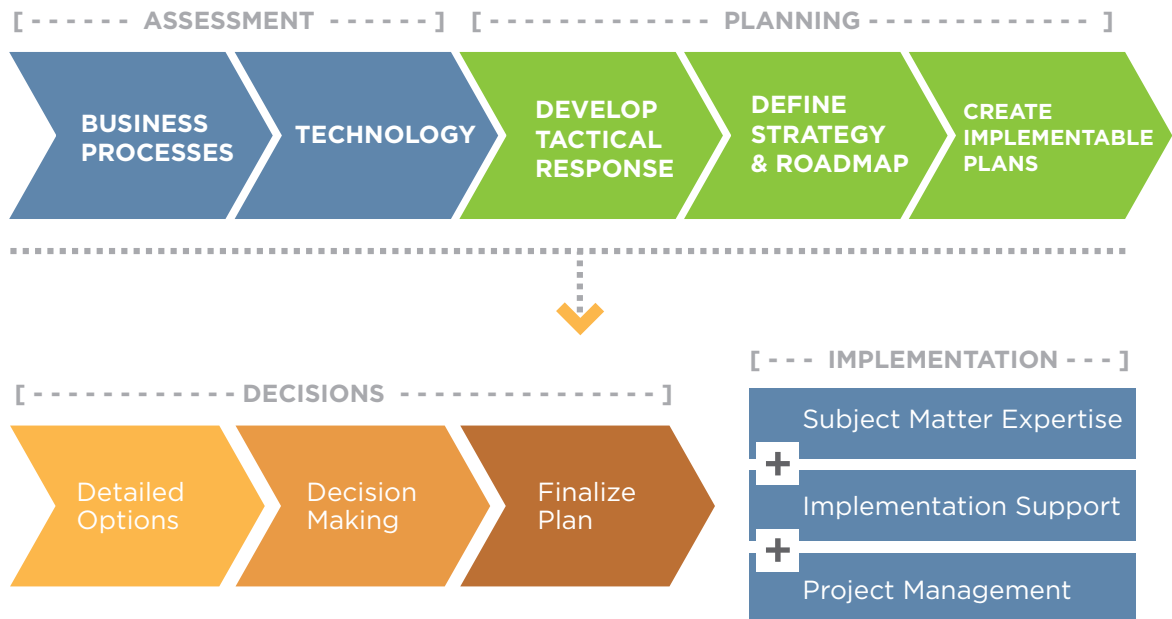


ACROSS FUNCTIONAL AREAS



TRADING TECHNOLOGY SOLUTIONS AND IMPLEMENTATION

OUR PROCESS

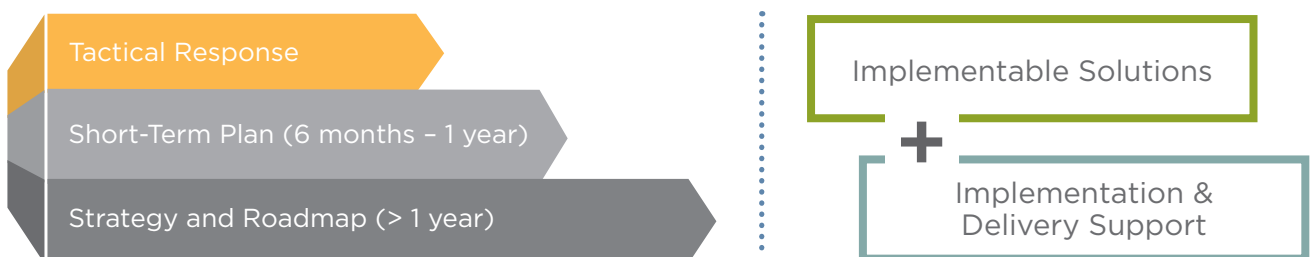


While crafting a technology strategy, we focus on the business processes of each group, the overall needs of the firm, and an understanding of technology best practices from interactions with peer firms. We then translate this strategy into specific technology project goals and milestones.

Once a roadmap and strategy are established, we assist in assembling the implementation resources (i.e. internal team, third-party resources, and vendor solutions). We support the implementation effort with our subject matter and management expertise. This includes specific delivery of complex implementation tasks, detailed project management, and reporting to stakeholders and senior management.

INTEGRATING TACTICS, PLANNING, AND STRATEGY

We solve urgent problems first. We help develop tactical responses to pressing issues and quick-to-solve problems. Once the urgent and the easy-to-solve problems have been addressed, we collaborate with the business groups, the technology group, and senior management to develop a detailed technology strategy and roadmap. Core to our process is facilitating and managing the discussion between business groups and mediating competing needs to develop a prioritized list of proposed technology requirements. Then, in collaboration with the firm's technology group and key vendors, we develop proposed implementable solutions.



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UNDERSTANDING KEY PROCESSES OF BUSINESS GROUPS

Our process begins with a dialogue with the firm's business groups to understand the fund's investment strategy, its business processes, and the needs of each of the firm's trading and operational areas. While crafting a technology strategy, we focus on the business processes of each group, the overall needs of the firm, and an understanding of technology best practices from interactions with peer firms. We then translate this strategy into specific technology project goals and milestones.

PORTFOLIO MANAGEMENT	MIDDLE OFFICE & RISK	BACK OFFICE	INVESTOR RELATIONS	LEGAL & COMPLIANCE
PRE-TRADE	Trade Matching & Confirmation	Settlement & Clearing	Client Reporting	Trading Agreements & Documents
Research & Analysis				
Investment Idea Generation	Valuation (Mark-to-Market)	Custody & Cash Management	Fact Sheets & Newsletters	Compliance Procedures
TRADE MANAGEMENT	Collateral Management	Accounting & NAV Generation	Presentations & Marketing	Trading Surveillance & Restricted Lists
Order Management				
Trade Execution	P&L Calculation	Tax	Client Relationship Management	Monitoring & Understanding Regulation
POST-TRADE	Performance Attribution			Regulatory Filings & Approvals
Trade Capture				
Trade Allocation	Risk Management			

PLANNING FOR DATA, APPLICATIONS, AND INFRASTRUCTURE

DATA

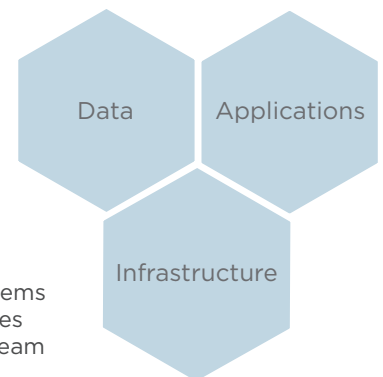
Data is consumed and produced by the various business groups and includes external sources of data such as market data from providers (e.g. Bloomberg and MarkIt), trade orders and executions, calculated P&L and performance attribution, and accounting and financial reporting data.

APPLICATIONS

Software applications support key activities such as research, trading, valuation, accounting, client reporting, and compliance. Core applications such as order management systems, portfolio management systems, and portfolio accounting systems span across business groups. Applications consume both external and internal sources of data and produce additional data that are used for reporting, analysis, or downstream processing.

INFRASTRUCTURE

Data and applications depend on a robust technology infrastructure that requires planning, installation, and management. High-availability, redundancy, and resiliency is vital in a trading environment. Several opportunities exist to use managed services and outsourced providers to create a best-of-breed environment in a cost-effective and scalable manner.



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ACROSS FUNCTIONAL AREAS

Technology planning and strategy requires addressing business requirements through technology solutions depending on key functional areas:



CASE STUDY 1: CRAFTING A TECHNOLOGY STRATEGY FOR CONTINUED GROWTH

A prominent global-macro and quantitative strategies hedge fund based in Connecticut had grown significantly over the last five years. The firm had weathered the financial crisis of 2008 and their investment strategies rebounded and posted good results in 2010 and 2011. As a result, assets under management had grown from a low of \$2.5 billion to their current levels of \$7 billion. The number of investment strategies jumped up from 2 core strategies focused on US interest rate and foreign exchange products to 5 different strategies with additional exposure to Europe, Latin America, and Asia. The team had grown from 65 people to over 225 professionals.

This resulted in an exponential growth of the data needs and applications that were being supported. However, the firm's technology platform had not kept pace and the core trading systems, infrastructure architecture, and technology operational processes had not matured. The firm's technology group was severely short staffed and was depending on the extreme efforts of a few talented team members to support the business day-to-day. However, these deficiencies were resulting in severe outages that were affecting the firm's trading and daily operations. The firm's CTO believed that a plan needed to be developed with the involvement of his business users and senior management; however, his team was consumed with daily operations and simply did not have the bandwidth to develop a coherent strategy.

SOLUTION

- Developed a tactical plan and technology strategy in-conjunction with the CTO that would put them on the course to smooth daily operations and provide a foundation for continued growth.
- Helped identify immediate tactical solutions and then recommended two pointed vendor solutions that would help alleviate the immediate production issues.
- Worked with technology staff and leveraged vendor relationships to facilitate decisions and implementations to rectify deficiencies with the trading platform, including the back-end network infrastructure and enterprise data storage systems.
- Implemented improved processes to help manage changes in the production environment, deliver quality end-user support, and improve disaster recovery procedures.
- Assembled a team of key stakeholders at the firm from their business groups along with their technology group. Through a dialogue with them, we gained an understanding of the business requirements, technology environment, and future growth projects. Through these discussions, developed a longer-term strategic roadmap that would guide project work.
- Recognized that the technology team required additional skills and helped recruit new key hires. We recommended a staff re-organization and re-alignment of reporting lines.
- Specifications were developed for enhancements to the infrastructure to leverage newer technologies and to the firm's data management, trade processing, and analytics systems, providing a blueprint for the firm's technology strategy.

BENEFITS

- An efficient, stable, and secure technology environment that minimized trading interruptions and mitigated potential trading losses.
- Successful implementation of core systems provided a solid foundation for continued growth and provided detailed project roadmap to achieve technology and business goals.
- Technology strategy and roadmap that demonstrates firm's commitment to a sound trading infrastructure to external stakeholders e.g. investors and regulators.

CASE STUDY 2: VENDOR SELECTION ASSISTANCE ON A COMPRESSED TIMELINE

A multi-strategy hedge fund manager with \$8 billion in assets under management had decided to implement a central repository for securities and pricing data (e.g. security master and pricing master). The firm supported multiple investment strategies by both in-house portfolio managers and external managers who managed segregated separately managed accounts (SMAs). Investment strategies covered a broad range and included equity long/short, structured credit, global-macro, and commodity trading advisors (CTAs). As a result, the asset classes coverage was extremely broad, both in terms of instruments traded and geographical spread. The firm's CTO required a short-list of vendors and an initial assessment to make recommendations to the firm's management committee.

SOLUTION

- Understood the requirements quickly through two focused working sessions with the firm's business analyst (i.e. asset classes traded, market data sources, and overview of business processes).
- Provided the client with information on over fifteen vendors and assisted them in narrowing the list to five vendors to review in more detail.
- Organized curated short-demos with each of the vendors that allowed the client to understand the most relevant features of each of the products and reduce the list to three vendors.
- Assisted the client in undertaking a detailed evaluation of the three short-listed vendors which resulted in one being selected for a proof-of-concept, which subsequently continued into implementation.

BENEFITS

- Sped up the selection process, by leveraging our knowledge of the business issues, industry knowledge, and vendor relationships. Vendors were short-listed and narrowed to three contenders within a month – significantly shorter than a full vendor selection process.
- Guided the proof-of-concept with our business and product knowledge helped and bring the client close to making a final product decision that is the best fit for their needs.
- Produced buy-in from key business stakeholders and management team by sharing our industry knowledge of how peer firms solve similar problems, giving the key stakeholders confidence in making decisions.

TEAM



SANJAY R. BHARWANI

Sanjay founded Risk Advisors Inc. to bring together markets professionals, risk management experts, and technologists to serve clients in financial markets. He actively consults with clients on risk management and technology related projects, and advises startup ventures focused on new ideas for the financial services industry. Previously, Sanjay was the Chief Information Officer at M. Safra & Co., a multi-strategy hedge fund focused on global macro and systematic trading strategies. Earlier in his career he focused on emerging markets debt at EXIS Consulting, a boutique financial markets advisory firm, and derivative valuations at Reval, a risk solutions provider. Sanjay received his MBA from the Wharton School at the University of Pennsylvania, and a Bachelors of Commerce from the University of Mumbai.



LAURIE YEH

Laurie leads the Operational Risk and Compliance practice. She is experienced in delivering business process and technology solutions for financial institutions. Before joining Risk Advisors, she was with Gottex Fund Management, a Swiss based fund of hedge funds, where she managed the product enhancements to the fund's portfolio analysis system. Prior to Gottex, she was at EXIS Consulting, a boutique financial markets trading systems and advisory firm, where she directed the delivery of client projects. Laurie holds an MBA from NYU Stern School of Business, and a BA from Cornell University.

ABOUT RISK ADVISORS

Risk Advisors Inc. is a consulting firm that understands the dynamics of financial markets and the inherent challenges in implementing a cohesive investing and risk management program across the enterprise. We offer deep industry knowledge, a rigorous process framework, and technology expertise to provide practical solutions for financial institutions and asset managers.