



COMMITMENT TO EXCELLENCE



¥ **Financial
Services
Technologies**



Saven Technologies

INTRODUCTION

Saven Technologies is an Information Technology Services Provider that specializes in planning, managing and implementing Information Technology solutions. Through offices in USA, UK and India, Saven offers consulting services on an onsite, offsite and offshore basis. Saven also develops products complementary to its consulting operations that further add immediate, measurable value to clients. Our approach is to apply a structured delivery methodology based on industry best practices, providing end results with significant business benefits.

Our focus is to deliver custom solutions for the financial industry. As a pioneer in innovative solutions and technologies, the company has vast experience in a broad spectrum of mission-critical offerings that include B2B and B2C financial enterprise integration, electronic trading, finance portal, market data and exchange automation solutions. The company's services enable financial services clients to deploy real-time event-driven e-Business applications that enable them to respond to rapidly changing markets and business events anywhere in the world. Our consulting services' team enjoys the challenge of building state-of-the-art systems and have proven, over-and-over, their ability to deliver. Our staff can work with you to understand your requirements and design a solution that best fits your needs. Once the design is complete you could have us implement it for you, or we could develop it collaboratively with you.

People, Passion, Processes, Exceptional Technology & Commitment to Excellence are key to our success. A cadre of highly motivated and trained architects, project managers, software engineers, network architects, and deployment engineers staff Saven Software's Consulting Services. Their areas of expertise include Education, financial & insurance applications, Internet/Intranet applications and many more. Among the Consulting Staff are experts in JAVA, C++, C, COM, DCOM, MTS, CORBA etc. who have experience working on Unix, Linux, NT, VMS, Legacy systems, and many other platforms. The staff can perform the full gamut of activities from architecture analysis, through design, coding, and other consulting activities. Saven has adopted component-based approach for building robust applications and has developed an extensive library of re-usable components for thin client real time applications.

Proof of concept: Many of the customers find it very useful to build a proof-of-concept solution before embarking on a large project. This allows them to demonstrate the feasibility of the concept and gives them a "product" that they can demonstrate internally. In these cases, Consulting Services can work with you to recommend and implement proof-of-concept solutions quickly and at a low cost.

Objective:

- ❑ Work with customers to continuously evolve its information technology solutions and services to meet organizational challenges.
- ❑ Committed to using open standards and commercial off the shelf technologies to ensure organizations benefit from flexible solutions that maximize their return on investment.
- ❑ Provide immediate value to clients, look to extend the useful life of solutions already in place before replacing them with new technologies.
- ❑ Has a foundation in place, and integrates new technologies to provide for future growth.
- ❑ Employ highly experienced managers, trained technical personnel, and subject matter experts.
- ❑ Aim to work with customers to carefully collect and document the requirements and develop comprehensive project plans that are effectively implemented, managed and deployed within the project time and cost constraints.

OUR KNOWLEDGE & EXPERIENCE

One of Saven's key strengths has been to visualize the future needs of complex products. We can assist and work on product research & development for clients on contract basis. Saven has gained valuable insights into practices followed at organizations of various sizes. We developed and presented impeccable products at organizations like ABN AMRO, S&P Comstock, Wolverine Trading and Pitney Bowes. These clients have benefited from our diligent work and experience in putting together these complex applications that eventually turned into key products in the Clients' portfolios.

Compared to "Project Implementation" which involves delivering a solution based on the client's requirements, "Product Development" involves studying an industry, identifying a need and developing a solution from the ground up - it includes intellectual capital beyond just technology. Saven has developed extensive knowledge and expertise in Financial Services and is capable of providing powerful, integrated solutions for all areas of the financial services industry.

We possess strong functional & technical experience in areas such as: Banking • Trading Exchanges • Exchange Connectivity & Routing • Securities Clearing & Settlement • Auction Sites • Insurance • E-Market Places • Market Data Distribution • Portfolio Management • Risk Management & Control • Quantitative Modeling • Trading Systems • Securities Processing • Online Investment Systems • Equities • Exchange traded financial Derivatives • Financial Portals

Saven is involved in developing 1. **Online Investment Systems** that include financial planning, asset allocation, rule-based engines and portfolio management, aggregated account data, online trading, and real-time and historical market data services 2. **Securities Processing Systems** comprising real-time, Web-enabled portfolio management, clearance and settlement, accounting for broker/dealers and banks. 3. **Trading & Risk Systems** comprising integrated straight-through processing solutions for trading, managing and reporting of equities, derivatives, interest rates, money markets, fixed income and foreign exchange. These solutions include online transaction initiation and order management systems, integrated trading, trade matching and accounting systems.

In the process of delivering solutions to the financial service sector, we have indeed developed impeccable knowledge of leading data service providers (**Bloomberg, Reuters, S&P Comstock**), Exchange Systems (**Globex, CME, Eurex, NYSE, Nasdaq**) and other systems (**Sungard, TIBCO**). Saven has experience and knowledge in integrating various activities and technologies. We can increase the productivity of each functional area, while improving the efficiency of your entire investment process. This can translate into reduced overhead, increased profits, and enhanced client service.

The technological infrastructure is flexible enough to support the business models of today, including institutional brokerage, retail and on-line brokers, independent and traditional full-service broker/dealers, as well as other financial institutions and intermediaries. The following paragraphs outline Saven's experience in various financial systems.

A. TRADING EXCHANGE SOLUTIONS

Saven can deliver high-performance connectivity between third-party exchanges and front-end trading screens, enabling you to trade the world's hottest electronic exchanges in real-time like Access Eurex, LIFFE, Euronext, CME, CBOT, Xetra and Island with multiple users – and with extreme performance. Every exchange distributes confirmed fill information differently, forcing users who trade multiple exchanges to face the time-consuming task of sorting and consolidating non-standard fill data on a daily basis. Hence there is a need for multiple data sorting methods for real-time fill information in a common format from all exchanges. Proprietary trading groups, brokerage firms and global financial institutions all benefit from these solutions, allowing them to simplify and standardize back office processes.

CASE: FIX 4.2 Engine

Saven has developed core FIX Engine software using Java, in a robust multi threaded architecture, which can be used to build FIX Server and FIX client applications, supporting FIX 4.2 specification currently. This consists of several re-usable java libraries, which can be used to build FIX enabled applications to support Order Entry, Automated Testing supporting both functional and volume testing, and other real time trading related applications. The architecture makes it easy to integrate these modules in an existing trading framework, making it easier to add connectivity to new exchanges, which require FIX connectivity.

B. REAL TIME MARKET DATA SYSTEMS

Saven has vast experience working high-speed, digital data feeds that deliver access to real time and delayed information to power your trading and Internet applications. Tailored for financial institutions and corporate websites, Saven can help you on your real time Market data needs such as Integration, Custom Development, Data Parsers, real time data distribution. We have extensive experience from data & Trade Service products & its API from Reuters, Bloomberg, Future Source, S&P Comstock, CQG, Hyperfeed, AT Financial.

CASE : Prominent Financial Data & information Service Provider

Saven Technologies developed a real time charting application that can be part of the Client's Xstream Application Suite. This real time streaming Charting application is developed in Java/ AWT. Multiple AWT Component development and its integration to form **Real Time Charting** is the key objective. Charts, Tables, Tabs, Trees, Scroll Bars components were developed. Extensive Analytics engine package was developed for this application. This package is quite comprehensive and includes about 100 analytics that the user can access anytime from the application on a real time basis. This charting application is integrated with the client's main application suite: Xstream.



C. PORTFOLIO MANAGEMENT & REPORTING

Saven can build a sophisticated portfolio accounting system for large global investors. Designed and developed with industry leaders, the system gives investment professionals the real-time, reliable information they need to react to the evolving requirements of the global investment market. Saven has, many times, solved the problem of processing large volumes of time series data for complex transactions in real-time with lightning fast system performance. Its flexible design accommodates the changing and growing nature of global securities processing. Saven has become the clear technology leader in the field of global portfolio accounting/ Management systems.

CASE: Leading Options Market Maker

Saven has developed a trading and Portfolio management desk for the client's Risk Arbitrage Group. Saven worked with client's technical staff and Risk Arbitrage Desk to come up with a sophisticated Trading & Portfolio application. The application involves tracking the Arbitrage universe real time for potential profit opportunities & real time evaluations of the same. Access to multiple Newsvendors, data feed from Multiple Vendors such as Bloomberg and Reuters, Maintaining accurate order book for the Desk, Creating the Order Tickets are the key tasks involved. Salient features of the application are easy access to the whole Risk Arbitrage Universe (100s of Equity Deals anytime), accurate Order book, Flexible Deal Modeling (Extensive Statistical and Mathematical modeling). At any time, this desk has an exposure of 10's of millions of dollars in various Risk Arbitrage opportunities it identified in markets worldwide.

D. FINANCIAL APPLICATION PRODUCT RESEARCH

One of Saven's key strengths has been to visualize the future needs of complex products. It can assist and work on product research & development for clients on contract basis. It has gained valuable insights into practices followed at organizations of various sizes. We developed and presented impeccable products at organizations like ABN AMRO, S&P Comstock, Wolverine Trading and Pitney Bowes. These clients have benefited from our diligent work and experience in putting together these complex applications that eventually turned into key products in the Clients' portfolios.

CASE: Online Investment tools

Saven has developed an elaborate Online Investment tool with a target to serve Online Brokerage houses, Electronic Exchanges. Features include Charting: real time tick by tick charting. **Portfolio Creation & Tracking:** User can construct multiple portfolios and access both the real time ticks and also charting on intra day basis with a single click. **Extensive Analytical library:** It has a library of about 100+ analytical tools that can be applied to the charts on real time. Complex graphical visuals analytics such as cycles, Fibonacci Arcs are all implemented. **Security Search:** A intuitive way of search criteria is implemented to search the Instruments across the Data Service provider's universe. The search is quite exhaustive and can cover Equities, Derivatives, Cash products at the same time. Saven can configure this UI of the application with little effort to meet client's needs as a whole application is developed on component architecture.

E. SECURITIES PROCESSING & SETTLEMENT

Saven has experience to automate manual trading and order management processes, freeing you from watching the market and focusing on trading and investment strategy. The most comprehensive trading and order management toolset on the market, Moxy not only manages trading details, it integrates with other Office components to enable straight-through processing and unite mission critical functions throughout your firm. This integration helps eliminate re-keying of portfolio accounting information and provides seamless information sharing. And with Saven's experience in FIX electronic messaging, you can electronically route trades directly to FIX-capable brokers.

CASE: Commodity Trader and CPO

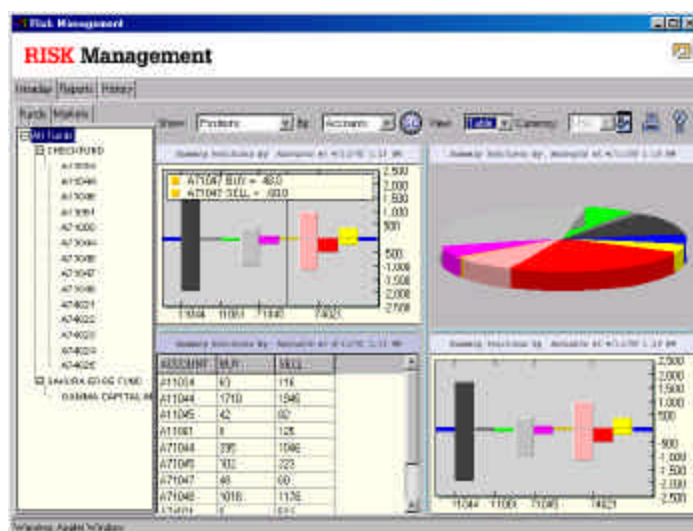
Client engaged Saven to develop an application that can handle trade data from their Eurex Executing broker to their back end Order Management Application. Saven came up with a time bound application for this functionality. Eurex trades executed from its broker are accessed from its FTP site, converted into specified order format to reload the data into its backend Order Management application from Ralfe and Nolan. Encryption and Decryption, automatic scheduler modules have been developed for this application.

F. TRADING & RISK MANAGEMENT SYSTEMS

Saven can provide you with proven approaches to the automation of order routing, trade compliance and operational risk management while also providing sophisticated exception management and easy implementation of trade or order repair stations. Automating routine operations and immediately managing exceptions help you reduce costs throughout the order or trade lifecycle. We can provide you with global trading position and exposure management in real time by integrating trading activity around the world. This permits your traders and risk management experts to fully and immediately understand exposures and opportunities to maximize profits while minimizing risk.

CASE: Multinational Bank

The application was developed for the Futures Division/ Futures Brokerage Division of the Bank for **Risk Management**: Application involves Real time Charting of Commodities Fund valuations, Trading Information of the Commodities Trading Bank's Clients/ Managers can access real time Account Trading Information, Account Valuations, Cash Balances, Open Positions, ... etc. Extensive user interactivity, real time functionality, Java thin client (Java/AWT Components) are the key features of the application.



G. ELECTRONIC TRADING PLATFORMS

Saven has experience in building real time Order Management, and Order Routing solutions, to be interfaced with Electronic Trading platforms, supporting various messaging protocols, both open and proprietary.

H. MIDDLEWARE EXPERIENCE

Over the years, distributed computing models such as COM and CORBA have given companies many ways to move information over networks, and the advent of technologies like J2EE and Web Services has introduced new choices. While these means of sharing information between systems are sufficient for many scenarios, the effective integration of entire businesses and the processes that make them run needs to be based on a robust platform that can handle the event-driven distribution of information and messages in a way that is consistent, reliable, and scalable.

Majority of the firms need an extremely reliable, flexible and high-performance platform for network communications. Saven's extensive experience with messaging solutions, can help you make powerful choices for integrating your business. For many years Saven worked with industry recognized messaging solutions that have been recognized as some of the most efficient, reliable and scalable ways of distributing information. By providing such a complete set of proven solutions, Saven can help you pick the messaging solution that best addresses unique set of systems, business requirements, and IT resources.

Saven has been solving messaging infrastructure problems for the most demanding companies in the worlds most challenging industries by designing innovative, high-performance solutions. From equities trading systems to the Risk Arbitrage systems, Saven has brought together state of the art technology with complete integration to create successful solutions. When time is critical and the complex system you are building has to be right the first

time, Saven has the experience and knowledge to help you meet your strategic goals.

With today's business landscape and global information demands evolving at breakneck speed, the need to quickly and easily develop real-time, highly distributed applications and achieve fast time-to-market has never been more crucial for business success. In the increasingly complex and heterogeneous environment in which your business must exchange and distribute revenue-critical information, Saven can bring vast experience (**TIBCO, TALARIAN, MQ SERIES, SEEBEYOND**) to provide reliable real-time messaging using industry-standard protocols with exceptional performance, scalability, bandwidth efficiency, and fault tolerance. Using its rich experience with variety of Messaging product's APIs (application programming interfaces) and class libraries, your organization can ensure that applications distribute and exchange information quickly, reliably and securely across any platform and any network-LAN, WAN, Internet or satellite.

Implementing a high performance, scalable messaging infrastructure system however, can be a remarkably complex and formidable endeavor, requiring a great deal of specialized knowledge and far more time than your business can afford. Exchanges and Trading Systems are driven by the high stakes global market need for 24x7 performance, scalability, reliability, fault tolerance and security. Saven can meet these challenges with high-volume, highly scalable market data distribution solutions, delivering as many as 25,000 messages per second—reliably and in real-time. We can also address many of your pressing operational problems created by mergers and acquisitions, adoption of incompatible front and back office systems, and implementation of new services over the past years and decades. Saven's experience with diverse systems allows you to tie these systems together for real time data sharing, cross system business process management and full visibility across the enterprise.

BROAD SERVICE AREAS:

Consulting Services: Saven's Consulting team works on-site with your staff to ensure success during each phase of your implementation. Our qualified personnel can assist your firm every step of the way—from installing and configuring the software to training your end users on how to maximize their productivity with the applications. The Consulting group also helps experienced Advent clients streamline and automate their existing procedures and migrate to the latest releases of our products.

Custom Engineering & Solutions: Saven's Custom Engineering team provides system conversion and custom report development services to help make the transition to your new Advent system as smooth as possible. We have helped hundreds of clients, both large and small, convert their data and develop custom reports to meet specific requirements.

Integration Management: Our integration management team works with you during implementation to integrate your systems and workflow with Saven's products. Services include developing custom interfaces that connect back-office systems to the Saven office portfolio management and trading/order management software, configuring and managing large volumes of data, and devising strategies for deploying products at distributed sites.

Project Management: Clients with a complex or aggressive implementation schedule will benefit from having a project manager develop and administer the implementation plan. Your project manager is a tactical and strategic implementation planner who assists you in meeting essential objectives before and during your implementation

OTHER INFORMATION

- Detailed description of the services Saven provided to a few companies as part of Technology Consulting.

www.saventech.com/documents/showcase.pdf

- A sample of Strategic report Saven Technologies has done on Offshore Outsourcing.

www.saventech.com/documents/offshore.pdf

- A sample product research Report that Saven developed for one of the leading financial Data Service providers.

www.saventech.com/documents/productresearch.pdf

- A detailed description of processes that Saven Technologies follows for its application development.

www.saventech.com/documents/Devprocesses.pdf

- Detailed description of our Professional services, Staff Augmentation activities & processes.

www.saventech.com/documents/Profservices.pdf

SKILLS & EXPERTISE

Our professional services division's attention has been to generate superior strengths in few areas. Our consultants' exposure to various companies does indeed fortify our effort in the same direction. On the technologies, Saven has been focusing on the cutting edge technological developments taking place in software world (Java, C#. etc), various third party applications (TIBCO, TALARIAN,) and emerging industry standards (FixML, FpML, VoiceXML...etc). Majority of our resources have focused knowledge and expertise in these technologies:

Commercial Exchange Vendors	TIBCO, ARIBA, COMMERCE ONE
Databases	Oracle 8x, Sybase, SQL Server 2000
Distributed Computing	CORBA, RMI, COM, DCOM, EJB
Financial Exchange APIs	CME (Globex), CBOE, EUREX, NASDAQ, NYSE
Financial Industry Protocols	XML, JAVA, JMS, EJB, OFX, FIXML, FinXML, FpML
Financial Data Service Provider APIs	Bloomberg, Reuters, Future Source, Bridge, COG, S&P Comstock
IDEs and GUI	Visual Cafe, JBuilder, VisualAge, VisualBasic, Visual C++, PB
Internet Technologies	JAVA, J2EE, JSP, ASP, EJB, Servlets, JavaBeans, XML, JavaScript, Perl, CGI, .NET
Legacy Systems	AS400, Mainframe, DEC, VAX, VMS, Tandem
Middleware products	Talarian, TIBCO, MQ Series, MTS, SeeBeyond
Operating Systems	Unix(SUN, AIX) , Windows NT/2000, Linux
Programmable Languages	C++, C,C#, SMALLTALK, COBOL
Wireless Platforms	Symbian's EPOC, Palm OS, Windows CE
Testing Tools	Win Runner, Load Runner, Test Director

APPLICATION ARCHITECTS	SYSTEMS ANALYSTS, ADMINISTRATORS & ENGINEERS
BUSINESS ANALYSTS	JR. DEVELOPERS
PROJECT MANAGERS	SR. DEVELOPERS & TEAM LEADS
QUALITY ASSURANCE & TESTING	DATABASE ADMINISTRATORS

OUR CONSULTANTS SERVED AT: ABN AMRO INC, Agri Credit, American Stock Exchange, California Power Exchange, Chicago Board of Options Exchange, Chicago Mercantile Exchange, Citibank, Commerce One, Dean Witter Discover Financial, FiServe, Freedom Group, Fujitsu, GE Capital, Global Health Care Exchange, GNI, Goldman Sachs, Household Financial, IPOLICY Networks, JP Morgan Chase, Merrill Lynch, NEC, Option Clearing Corporation, Pioneer, Principal Financial, S&P Comstock, Solomon Smith Barney, United Guarantee, Vantage Point Networks, Wealthplace.com, Wolverine Trading, Amerius, Microsoft, Sampra Trading, Meredith.

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