



## **Jordan & Jordan Market Data Services: Representative Engagements**

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# I. Exchange Market Data Compliance and Licensing

## Client Type: Major Commercial Bank

### **Mobile Application Market Data Redistribution Licensing**

For a major commercial bank, J&J provided guidance and expertise to the bank's developers and business as they developed and launched a new mobile platform for high net worth banking clients.

- › Reviewed and documented relevant terms and conditions pertaining to real time redistribution of exchange market data from two global exchanges
- › Provided expertise on the development of, and secured exchange approvals for, a quote meter
- › Engaged over 45 exchanges to obtain approval for redistribution of delayed data
- › Advised all relevant parties on reporting requirements; performed soft-audit of pre-launch usage and post-launch usage to ensure compliant metering
- › Created ordering process to manage additional exchange services required by the business

### **Market and Index Data Licensing Review and Execution Assistance**

For a major commercial bank, J&J conducted a comprehensive study of how market data was being used within the firm and conducted an exchange and index licensing gap analysis.

- › Identified and interviewed application owners and strategic internal market data administrative personnel to develop a comprehensive inventory of market data use and licensing
- › Reviewed relevant contracts to define licensing requirements; identified licensing gaps and calculated potential annual licensing uptick
- › Assisted in identification/interpretation/documentation of relevant exchange policies and completion of required documentation

### **Market Data Compliance Training and Recertification Program Development**

For a major commercial bank, J&J created two separate and sustainable programs designed to ensure market data use and distribution compliance going forward. Leveraging J&J's knowledge and insight into industry best practices, a compliance standard was defined and two functional programs developed: application owner market data compliance training course and an interactive recertification program.

- › Reviewed and assessed compliance programs at peer banks
- › Leveraged J&J's knowledge of industry compliance best practices to develop standard and define essential elements

- › Partnered with strategic internal personnel to identify criteria and communicate essential material

### **Market and Reference Data Compliance Review and Liability Assessment**

For a major commercial bank, J&J performed market data and reference data compliance review across two business divisions, including obtaining and reviewing relevant vendor and exchange contracts to identify critical terms and conditions.

- › Reviewed the contractual terms and uses of market and reference data within the bank including 24 real-time market data applications and 2 reference data applications
- › Identified and documented reporting procedures and application usage not compliant with exchange and vendor contractual requirements
- › Calculated potential liability associated with the identified reporting gaps and developed a remediation plan for application compliance issues
- › Recommended enhancements to ensure ongoing compliance with vendor and exchange requirements, based on J&J's expertise and industry best practices and developed plans for a certification process to ensure that applications are compliant with vendor and exchange contractual requirements
- › Created client Exhibit A's for NYSE Euronext, NASDAQ OMX, OPRA and the TMX Group, and prepared exchange settlement process documentation

## **Client Type: Global Investment Bank**

### **Market Data Reporting Review and Assessment/Remediation Recommendations**

J&J reviewed the market data reporting procedures to identify opportunities for improvements that would minimize/eliminate potential for under-reporting. Remediation assistance was also provided as part of an overall compliance strategy.

- › Validated an annual multi-million dollar under-reporting liability in applications used in Europe, the Americas and the Pacific Rim
- › Developed and implemented global application reporting processes to correct systematic under-reporting
- › Provided strategic and policy guidance for remediation of applications not compliant with exchange contractual and policy requirements
- › Developed and implemented process controls to eliminate the possibility for recurrence of systematic under-reporting
- › Assisted in developing a pro-active strategy to approach exchanges for liability settlements
- › Assisted in preparing for exchange audits, including presenting client's compliance, control and reporting processes to exchange auditors

## **Annual Global Application Compliance Review and Assessment**

J&J performs a comprehensive annual review and assessment of market data on a global scale, interviewing and analyzing how market data is distributed, used, controlled, and reported for over 225 application deployments. Potential liabilities are calculated and remediation strategies provided.

- › Analyzed market data usage of applications deployed in Europe, the Americas and the Pacific Rim
- › Identified over 40 applications not compliant with exchange reporting requirements; calculated potential annual liability to be over US \$26m (2013)
- › Analyzed applications that were part of a reporting process, identifying several with significant under-reporting
- › Identified and quantified several applications that were decommissioned/no longer displaying fee-liable exchange market data however users remain in the inventory and were being reported
- › Identified application deployment and market data permissioning processes that increased compliance exposure and drafted appropriate workflows to ensure market data compliance
- › Researched and identified an existing internal system that could be leveraged to introduce automation into application market data user reporting thus minimizing/eliminating potential for over- and under-reporting due to breakdowns from manual workflows
- › Assisted in developing a pro-active liability settlement strategy to approach exchanges, including development of an exchange-by-exchange risk rating analysis, identification of key exchange personnel and expected negotiation levers

## **Application Compliance Review and OpenDACS Migration**

Reviewed over 75 applications sourcing market data to identify potential compliance gaps

- › Interviewed, analyzed, and documented market data use and controls by approximately 200 applications
- › Identified several instances of shared application login IDs
- › Discovered use of multicast network to redistribute fee-liable market data
- › Identified four instances of market data vendor contracts not managed by the market data commercial team
- › Assisted in the migration of 75 applications to OpenDACS as a compliance solution

## **Global Application Identification and Compliance Recertification**

Identified and reviewed approximately 120 application deployments sourcing market data from Thomson Reuters over RMDS and through direct/co-location connections. As part of the application identification activity, J&J managed a web-based survey process that identified and queried owners of over 300 processes that were sourcing market data through shared system

ID's. Responses were analyzed and 60 applications were identified for inclusion in the recertification process.

- › Interviewed, analyzed, and documented market data use and controls by approximately 200 applications
- › Updated client's web-based application inventory system with relevant application details
- › Identified 16 applications as having potential exchange market data reporting compliance gaps amounting to over US \$2.5m in annual potential netted liability
- › Potential liabilities were broken down into the top 20 exchanges

### **Regional Application Market and Index Data Compliance Assessment**

Performed a compliance review of over 40 applications and 40 spreadsheets to identify compliance gaps and define potential licensing liabilities. The applications were obtained via an acquisition and were either scheduled to be divested along with a small portion of the business or decommissioned as part of a consolidation onto global platforms.

- › Interviewed application owners and strategic personnel to define and document data use, entitlement processes and controls, and downstream distribution by 40 applications including three databases
- › Identified compliance gaps and provided remediation recommendations
- › Reviewed and assessed use of market data regularly uploaded to spreadsheets
- › Obtained and reviewed vendor contracts and invoices
- › Validated per-query reporting methodology and prepared management summary
- › Identified potential over-reporting of 24 non-fee liable system IDs
- › Reviewed licensing requirements of 14 indexes and calculated potential annual licensing requirements

### **Fixed Income Application Data Usage Analysis**

Identified market data sources for a global investment bank fixed income application in preparation for a market data contracts review. This included assessing/analyzing internal market data redistribution, usage and storage, and reviewing/documenting market data displays within the application.

- › Reviewed applications and interviewed application owners, stakeholders, database owners, analytics modeling team, and data originators from North America, EMEA, and AsiaPac regions to identify all market data sources, usages and displays
- › Created a flow diagram to document market data redistribution process within investment bank and the fixed income application
- › Created a data-source matrix to document all market data usage and displays within the fixed income application and the original source for each market data service



- › Assessed market data control and permissioning at each data distribution channel and storage database
- › Identified potential risk areas within the market data handling process, and made recommendations for future process improvements

### **Proprietary Vendor Data Product Usage Analysis**

Performed financial analysis of usage of proprietary vendor data products used by vendor desktop software users and applications fed through the vendor data feed for assessment of overall value.

- › Analyzed exchange market data usage by 45 applications in North America and identified under-reporting liability amounting to millions of US dollars
- › Managed remediation activities of applications responsible for under-reporting
- › Developed an application reporting process and application market data approval workflow to improve compliance
- › Assisted in developing strategies for pro-active settlement of liability

### **Reference Data Contracts Analysis**

For a U.S. Investment bank, analyzed the firm's reference data contracts to determine whether the data could be used within an internal global security master database. J&J identified whether the use was permitted under the agreements and identified where potential exposures exist to help maximize the data use and assist for future contract negotiation.

- › Reviewed over 80 of the bank's reference data contracts, amendments and schedules across 20 different vendors to determine which uses were permitted under the agreements
- › Created a matrix to capture the following contractual boundaries based on a list of requirements from the internal Data Management Group:
  - Contracted Legal Entity
  - Internal/External Distribution
  - Enterprise Agreement
  - Department/Business Unit Limitations
  - Geographic or Business Site Limitations
  - User Login Restrictions
  - Creation of Derived Data Limitations
  - Database Creation Limitations
  - Restricted Use Cases
  - Prior Permission Requirements
  - Attribution and Disclaimer Requirements
- › Created a summary sheet for each contract identifying the boundaries and the relevant contractual language

- › Evaluated and analyzed the matrix and created tear sheets with the Market Data Management Group to:
  - aid in understanding the usage limitations for the database
  - develop a process for using tools in all stages of the market data management process from sourcing to contracting to assisting internal users with understanding what their limitations on use of the data are

### **Client Type: Major Inter-Dealer Brokerage**

Provided domain expertise and advisory services to ensure compliance with non-display usage and licensing compliance for over 20 exchanges and index providers. J&J guided a new market data team through the complexities of market data licensing, helping identify and comprehend relevant terms and conditions, specifically those pertaining to non-display applications.

- › Developed an inventory of exchange and index licensing relevant to non-display policies
- › Reviewed current use and licensing to identify gaps and potential exposures
- › Verified services were still required and validated invoice charges
- › Recommended which data providers to prioritize; provided remediation strategies including defining approaches
- › Assisted in removal of unused products and services from invoices

### **Client Type: Global Investment Bank Fixed Income Application**

Identified market data sources for a global investment bank fixed income application in preparation for a phase two of market data contracts review, which included assessing/analyzing internal market data redistribution, usage and storage, reviewing/documenting market data displays within the application

- › Interviewed application owners, stakeholders, database owners, analytics modeling team, and data originators from North America, EMEA, and AsiaPac to identify all market data sources
- › Created a flow diagram to document market data redistribution process within the bank
- › Reviewed the fixed income application for market data usage and displays
- › Created the Data Source Matrix to document all market data usage and displays within the fixed income application and the original source for each market data
- › Assessed market data control and permissioning at each data distribution channel and storage database
- › Identified potential risk areas within the market data handling process and made recommendation for future process improvement

## **Client Type: Top 100 Hedge Fund**

### **Entitlement System Approval Assistance**

J&J assisted in achieving compliance with major North American securities exchanges' policies by obtaining exchange approval for a non-traditional market data entitlement/reporting procedure that resulted in significantly lower market data costs.

### **Infrastructure Review and Assessment**

J&J reviewed the market data infrastructure for a Top 100 Hedge Fund, identifying weaknesses that could result in compliance gaps and providing recommended options to correct issues and maintain identified exchange market data compliance. In addition, J&J developed a response/justification to an adverse audit finding from a major exchange that resulted in a significant reduction in the initial audit assessment.

## **Client Type: Correspondent Clearing Firm**

- › Analyzed market data procedures in place at firm's online brokerage services division with respect to customer on-boarding, exchange agreement management, entitlement systems and exchange reporting
- › Performed a gap analysis with respect to current procedures and compliance with exchange policies
- › Identified potential under-reporting to exchanges and third party vendors
- › Provided policy guidance for remediation of procedures not complying with exchange contractual and policy requirements
- › Recommended procedural improvements and implementation of technological solutions to further provide remediation of compliance issues

## **Client Type: Investment Management Firm**

Performed a market data health check and provided recommendations to align existing market data procedures with industry best practices, including governance and control, reporting, and licensing and compliance.

- › Interviewed relevant market data administration personnel to understand existing market data governance and management processes/responsibilities
- › Interviewed application owners and strategic personnel to define and document data use, entitlement processes and controls, and downstream distribution by 15 applications
- › Conducted several mock audits to uncover potential control and reporting gaps
- › Identified compliance gaps and provided remediation recommendations
- › Reviewed non-display applications, assessed licensing gaps and calculated potential liability

- › Identified potential under-reporting liability of over \$4M/year
- › Identified potential under-licensing liability of over \$1.2M/yr
- › Provided recommendations to address critical market data processes that were not aligned with industry best practices and contributing to the potential compliance gaps that were identified and quantified

### **Client Type: Major Global Exchange**

- › Reviewed market data contracts executed by a major North American equities exchange
- › Created an inventory of the relevant terms and conditions of the market data contracts identifying and documenting relevant terms and conditions
- › Conducted a licensing gap analysis to identify issues with the exchange's use of market data to create and distribute indices.

## **II. Index Data Compliance & Licensing Services**

### **Client Type: Major Commercial Bank**

#### **Index Data Licensing Review and Audit Assistance**

For a major global commercial bank, J&J assisted with responding to an audit conducted by a major global index provider.

- › Reviewed all documents and questionnaires submitted to the auditor as well as the audit findings
- › Reviewed relevant contracts to define the scope of the licenses granted and identified contractual provisions to rebut certain audit findings
- › Calculated estimated audit liability
- › Drafted audit response rebutting audit findings

## Client Type: Major Global Exchange

### Market Data Licensing Review and Gap Analysis

For the index business of a major global exchange, J&J performed a comprehensive review of exchange agreements for market data used to create indices and identified potential licensing gaps.

- › Identified and interviewed application owners and strategic internal market data administrative personnel to develop a comprehensive understanding of market data use within the index business
- › Reviewed agreements with approximately 50 data providers and created an inventory of market data contracts and licensing requirements
- › Identified licensing gaps and calculated potential annual licensing uptick
- › Drafted presentation summarizing licensing gaps and corresponding potential annual licensing uptick for upper management

## III. Managed Services

### A. Market Data Reporting (MDR)

#### Client Type: Global Investment Bank

##### Exchange and Vendor Reporting as a Managed Service

Currently perform exchange and vendor reporting as a managed service on behalf of a tier 1 global investment bank, and provide several strategic value-added services

- › Obtain market data usage extracts from multiple client sources and process the sources using proprietary automated calculation engine
- › Submit user and usage reports to exchanges and vendors on monthly and quarterly basis
- › Prepare, validate and submit monthly MISU reports for NYSE (including AMEX) and OPRA
- › Implement direct exchange reporting and maximize cost reduction opportunities
- › Identify and implement cost savings and cost avoidance strategies
- › Deliver a positive Return on Investment to client
- › Implement process improvements by increasing management oversight and compliance
- › Provide analytical reports such as month-over-month analysis (break report), netted report and invoice reconciliation reports
- › Design, implement, and maintain a computer-based market data compliance training course

- › Perform a rules-review to identify potential compliance gaps where reporting is not in line with exchange and vendor contractual requirements
- › Provide audit support

## **Client Type: FinTech Execution Brokerage & Research Provider**

### **Exchange and Vendor Reporting as a Managed Service**

- › Perform exchange and vendor reporting as a managed service and provide several strategic value-added services
- › Obtain market data usage extracts from multiple client sources spanning North America and Asia and process the sources using proprietary automated calculation engine
- › Apply business rules such as netting and role-based waivers
- › Submit user and usage reports to exchanges and vendors on monthly and quarterly basis
- › Prepare, validate and submit monthly MISU reports for NYSE (including AMEX) and OPRA
- › Implement direct exchange reporting and maximize cost reduction opportunities
- › Identify and implement cost savings and cost avoidance strategies
- › Deliver a positive Return on Investment to client
- › Implement process improvements by increasing management oversight and compliance
- › Provide analytical reports such as month-over-month analysis (break report) and invoice reconciliation reports
- › Perform a rules-review to identify potential compliance gaps where reporting is not in line with exchange and vendor contractual requirements
- › Provide audit support

## **Client Type: Hedge Fund**

### **Exchange and Vendor Reporting as a Managed Service**

Currently perform exchange and vendor reporting as a managed service on behalf of two hedge funds and provide several strategic value-added services

- › Obtain market data usage extracts from multiple client sources and process the sources using proprietary automated calculation engine
- › Apply business rules such as netting and role-based waivers
- › Submit user and usage reports to exchanges and vendors on monthly and quarterly basis
- › Implement direct exchange reporting and maximize cost reduction opportunities
- › Identify and implement cost savings and cost avoidance strategies

- › Deliver a positive Return on Investment to client
- › Provide analytical reports such as month-over-month analysis (break report)
- › Implement process improvements by increasing management oversight and compliance
- › Review contracts and data notification changes and provide exchange policy guide updates on a quarterly basis
- › Provide audit support

## **Client Type: Major U.S. Online Brokerage Firm**

### **Exchange and Vendor Reporting as a Managed Service**

Currently perform exchange and vendor reporting as a managed service on behalf of a top tier eBrokerage and provide several strategic value-added services

- › Obtain market data usage extracts from multiple client sources and process the sources using proprietary automated calculation engine
- › Apply business rules such as netting, capping and role-based waivers
- › Submit user and usage reports to exchanges and vendors on monthly and quarterly basis
- › Implement direct exchange reporting and maximize cost reduction opportunities
- › Identify and implement cost savings and cost avoidance strategies
- › Deliver a positive Return on Investment to client
- › Provide analytical reports such as month-over-month analysis (break report) and detailed row/quote count summary
- › Implement process improvements by increasing management oversight and compliance
- › Design, implement, and maintain a computer-based market data compliance training course
- › Perform a rules-review to identify potential compliance gaps where reporting is not in line with exchange and vendor contractual requirements
- › Provide audit support

## **B. Market Data Administration Manager**

### **Client Type: Boutique Investment Bank**

#### **Outsourcing Services of Market Data Administration**

Provided full-time on-site support to effectively manage the market data administration functions of the firm.

- › Managed market data inventory by handling all user entitlements for moves-adds-changes
- › Verified accuracy of invoices by reconciling against market data inventory and contracts
- › Resolved vendor payment inquiries
- › Analyzed market data user permissioning to identify and remove any unused data feeds and achieve cost savings for the firm
- › Automated the creation of various monthly internal expense reports

## **IV. Strategic Consulting**

### **A. Expense Management**

#### **Client Type: Global Investment Bank**

##### **Market Data Spend Analysis**

Analyzed market data usage and spend to identify potential cost reduction opportunities.

- › Reviewed market data vendor contractual obligations, including termination and renewal dates, usage requirements, early termination penalties, etc.
- › Identified current usage and requirements, including under- or non-utilized products and non-essential market data permissioning
- › Researched and provided comparisons with alternative vendor products where available
- › Analyzed vendor product usage to identify potential savings through contractual negotiation where alternative products were not available
- › Reviewed the market data inventory and reporting processes to identify opportunities for optimization
- › Developed total annual savings potential based on viable alternative market data products, permission reduction, contractual negotiation and process optimization

##### **Market Data Expense Reduction Project Management**

Provided project management services for an expense reduction initiative focused on displacement of high-cost products with lower-cost competitive alternatives.

- › Conducted a competitive product displacement programs using a lower cost market data terminal product for a Securities Lending department and a Fixed Income division
- › Prepared recommendations based on usage data for replacing higher cost terminal products with the Finance division
- › Analyzed market data usage within organization identifying departments where potential existed to replace high cost terminal products resulting in significant expense reduction



- › Prepared bi-weekly management scorecards and dashboards communicating status of initiative

### **Fixed Income Application Data Usage Analysis**

Identified market data sources for a global investment bank fixed income application in preparation for a market data contracts review, which included assessing/analyzing internal market data redistribution, usage and storage, reviewing/documenting market data displays within the application

- › Reviewed applications and interviewed application owners, stakeholders, database owners, analytics modeling team, and data originators from North America, EMEA, and AsiaPac regions to identify all market data sources, usages and displays
- › Created a flow diagram to document market data redistribution process within investment bank and the fixed income application
- › Created the Data Source Matrix to document all market data usage and displays within the fixed income application and the original source for each market data
- › Assessed market data control and permissioning at each data distribution channel and storage database
- › Identified potential risk areas within the market data handling process and made recommendation for future process improvement

### **User-Paid Market Data Spend and Inventory Analysis**

Performed a comprehensive review of general ledger extracts to identify market data services to be included in the market data inventory system and managed by the market data administration team.

- › Identified and analyzed over 300 services with a total annual spend of US \$17M
- › Obtained and analyzed contracts and invoices; reviewed with vendor account managers and business owners
- › Documented services including contractual and invoicing details, user makeup, chargeback allocations, and current service management processes
- › Worked with vendors to reconfigure invoicing arrangements, coordinating with both the vendor and the internal vendor procurement teams to utilize the client's accepted standard ordering system
- › Added 24 new vendors/82 services to the market data inventory system and administration processes, adding transparency to market data usage and spending and resulting in market data spend savings of approximately US \$175,000 over the first two years
- › Collected over 65 vendor contracts for capture by their internal contract management system

## Client Type: Major U.S. Online Brokerage Firm

### Market Data Spend Analysis and Reporting Optimization

Identified market data spending for a major online retail brokerage, which included analyzing invoices and internal resources, performing a compliance analysis of exchange agreements and a review of current exchange reporting procedures to identify shortcomings and make recommendations for improvements.

- › Reviewed all current executed exchange contracts and fees, both usage-based and administrative; compared to terms contained in most recent published agreements by exchanges to identify disadvantageous terms or compliance gaps
- › Provided an in-depth analysis of all current key exchange policy requirements and fee schedules
- › Reviewed the current monthly exchange reporting processes and the proposed standardized format for reporting individual users; identified potential flaws or missing fields in the proposed reporting format specifications
- › Suggested improvements in the reporting process in order to reduce costs, improve the accuracy of reporting, and make the process more efficient
- › Conducted an initial review of ongoing contract renewal process and expense forecasting for strategic exchanges and vendors to identify areas for further examination
- › Conducted an initial review of entitlement processes to identify potential process optimizations for future examination

### Market Data Organizational Structure and Data Procurement Assessment

Reviewed the market data management organizational structure and service procurement processes to identify process improvements and cost reduction opportunities.

- › Evaluated service procurement processes and recommended utilizing cross-functional coordination between different areas (e.g. market data, legal and business units) in order to streamline and centralize the procurement processes
- › Reviewed the current vendor negotiation process, including review of contractual terms for market data services and suggested limiting contract terms to less than two years with clauses that limit price increases to a mutually agreed upon and verifiable metric such as the CPI to better position client for future re-negotiations
- › Identified a lack of transparency surrounding market data costs and recommended creating and delivering detailed market data spend reports to end-users of commercial market data to control market data spend across business units
- › Suggested utilizing a recertification policy on a quarterly or semi-annual basis to determine whether market data services are needed and cancel any unnecessary services in order to curtail nonessential market data costs

## **Client Type: Major US Buy- and Sell-Side Firm**

### **Market Data Spend Reduction Initiative**

Managed a firm-wide project to reduce market data spend through demand management, product substitution, contract compliance, and vendor negotiation levers.

- › Analyzed over US \$200M in annual market data spend at the business unit, cost center, and user levels to identify quick wins, long-term savings opportunities, and strategic objectives
- › Projected annual savings by vendor across four spend reduction levers for communication at the executive level
- › Worked with business units to execute on savings initiatives identified during analysis phase
- › Reconciled contracts and invoices to identify instances of vendor over-billing
- › Developed firm-wide best practices to ensure long-term benefits of market data spend reduction efforts
- › Prepared playbooks with strategies and levers for renegotiating Thomson Reuters data contracts

## **Client Type: Hedge Fund**

### **Market Data Infrastructure and Spend Review**

Reviewed current market data infrastructure, including data feeds, desktop products, and applications, as well as annual spend, to identify alternative products and vendors.

- › Reviewed invoices to identify data feed vendor, exchange, and third-party service provider fees
- › Reviewed market data inventory for terminal user and application data usage
- › Identified alternative vendor products
- › Performed cost and development analysis of current vendor solution and alternatives based on licensing fees and integration effort for alternative data feeds and applications

## **B. Administration Optimization**

### **Client Type: Global Investment Bank**

#### **Market and Reference Data Procurement and Governance Assessment**

Analyzed market and reference data sourcing, entitlement, and contract management processes to identify gaps with industry best practices and develop recommendations

- › Reviewed the end-to-end workflow required for service procurement by end-users, applications, businesses/desks, and the enterprise
- › Analyzed, documented, and assessed the organizational structure, conducted interviews with key data management administrators, and defined individual roles and responsibilities
- › Evaluated current vendor contract negotiation practices including interviewing key sourcing employees and reviewing contracts; developed a corporate procurement policy document establishing critical procurement and vendor relationship/contract management best practices
- › Provided an enterprise data-management assessment, identifying gaps with industry best practices, recommending solutions such as creation of online training and certification programs, service/entitlement review and recertification processes, and automation of entitlement inventory management/contract maintenance

### **Market Data Inventory and Process Update**

Analyzed market data spend to realign management of certain categories of market data services, leveraging existing market data management software and administration personnel, and setting up procedures for efficient and ongoing maintenance.

- › Performed a comprehensive review of market data subscriptions for market data inventory update
- › Acted as liaison between client and vendors to ensure appropriate routing of invoices
- › Helped design and implement ongoing procurement procedures to ensure ongoing inventory maintenance
- › Updated and communicated changes and additions to ordering system to market data administration team

### **Market Data Reporting Automation**

Worked with the market data administration team and a major market data inventory system provider to develop an automated vendor and exchange reporting process.

- › Reviewed current reporting processes to identify gaps and areas for augmentation
- › Developed requirements for an automated reporting solution
- › Developed a database solution to produce reports in Reuters DAD, NYSE VRXML, TCB Data Solar, CSV, and Excel formats to report to over 150 vendors and exchanges
- › Worked with market data inventory system provider to link proprietary database solution to market data inventory system for automated reporting

## Client Type: Major U.S. Online Brokerage Firm

### Market Data Organizational Structure and Data Procurement Assessment

Reviewed the market data management organizational structure and service procurement processes to identify process improvements and cost reduction opportunities

- › Evaluated service procurement processes and recommended utilizing cross-functional coordination between different areas (e.g. market data, legal and business units) in order to streamline and centralize the procurement processes
- › Reviewed the current vendor negotiation process, including review of contractual terms for market data services, and suggested limiting contract terms to less than two years with clauses that limit price increases to a mutually agreed upon and verifiable metric such as the CPI to better position client for future renegotiations
- › Identified a lack of transparency surrounding market data costs, and recommended creating and delivering detailed market data spend reports to end-users of commercial market data to control market data spend across business units
- › Suggested utilizing a recertification policy on a quarterly or semi-annual basis to determine whether market data services are needed and cancel any unnecessary services in order to curtail nonessential market data costs

### Ticker Plant Systems and Operations Analysis

Performed a review of the people, processes, and technology required to run the ticker plant of a major U.S. online retail broker to provide tactical and strategic recommendations.

- › Conducted reviews with development, operations, and business staffing to develop business requirements and service delivery specifications for market data
- › Developed ticker plant total cost of ownership for senior management review
- › Identified proprietary components of ticker plant that could be replaced with commodity hardware and software and made recommendations for a vendor RFI process
- › Suggested performance monitoring and metering tools and test processes to identify ticker plant thresholds and possible points of failure
- › Identified deficiencies in operations and development staffing to manage current ticker plant technology
- › Developed scenarios for ticker plant improvement through in-house incremental upgrades, proprietary component displacement with commodity offerings, or outsourcing ticker plant technology and management

## **Client Type: Major Commercial Bank**

### **Market and Index Data Licensing Review and Execution Assistance**

For a major commercial bank, J&J conducted a comprehensive study of how market data was used within the firm and created an exchange and index licensing gap analysis.

- › Identified and interviewed application owners and strategic internal market data administrative personnel to develop comprehensive inventory of market data use and licensing
- › Reviewed relevant contracts to identify licensing requirements; developed licensing gap analysis
- › Assisted in interpretation of policies and completion of required documentation

## **C. Project Management**

### **Client Type: Major North American Options Data Consolidator and Distributor**

#### **End-to-End Vendor Identification, Evaluation and Selection Process**

Leveraged our domain expertise of the options industry and market data technology to provide consulting and project management throughout the vendor selection process. J&J assisted in RFP definition, management of the bid process, and evaluation of responses resulting in successful selection of a qualified service provider.

- › Managed RFP process including documenting requirements, soliciting bidders, developing evaluation criteria, reviewing and scoring responses
- › Partnered with Selection Committee to identify and prioritize specific requirements and functionality
- › Held Bidder Conference to explain the RFP and answer questions
- › Developed Bidder Capability Matrix as an aid to bid comparison, analysis, and scoring
- › Provided recommendations to the selection committee

## Client Type: Global Investment Bank

### **Symphony Messaging Platform Implementation**

Provided project management and general guidance/oversight for the strategic corporate-wide implementation of the Symphony messaging platform.

- › Defined use cases
- › Developed, planned and managed pilot launches
- › Addressed risk and compliance concerns
- › Trained administrators and Compliance Team on available functions
- › Managed broad deployments
- › Interfaced with Symphony, providing feedback and identifying prioritization of the firm's interests

### **Market Data Administration Off-Shoring Project Management**

Provided project management services over an eight-month period to facilitate the migration of market data administrative functions to a new off-shore location.

- › Provided day-to-day management support throughout the project lifecycle
- › Assisted with strategic planning, timeframes, and project metrics & deliverables
- › Coordinated the recruitment process
- › Developed IT requirements and worked with technical support both on- and offshore to implement necessary applications
- › Developed training program and documentation requirements; organized all logistical requirements for all on- and offshore travel
- › Provided regular communications to management and steering committees

### **Market Data Separation for Divestiture of a Commodities Business**

Provided project management services for the transition and separation of the Commodities Business.

- › Provided day-to-day management support throughout the project lifecycle
- › Assessed the users and the services to be transferred, created a user/service tracker
- › Identified sources of data for the applications used by Commodities group
- › Reviewed contracts for multiple vendors and obtained agreement letters to ensure continuity of services
- › Provided TSA team with monthly chargebacks details

### **Market Data Expense Reduction Project Management**

Provided project management services for an expense reduction initiative and for day-to-day management support.

- › Assisted Accounts Payable team with invoice reconciliation and worked with market data inventory team to revise inventory records
- › Reviewed the contractual terms for market data services and identified billing errors
- › Determined current market data infrastructure charges, confirmed servers and circuits with Technology team, provided the information to inventory team for updates
- › Analyzed market data services for possible redundancies, reviewed overlapping services with business and vendor account managers
- › Identified billing errors and followed thru with vendors for market data credits

### **Market Data Expense Reduction Project Management**

Provided project management services for an expense reduction initiative focused on displacement of high-cost products with lower-cost competitive alternatives.

- › Conducted a competitive product displacement program using a lower cost market data terminal product for a Securities Lending department and a Fixed Income division
- › Prepared recommendations based on usage data for replacing higher cost terminal products with the Finance division
- › Analyzed market data usage within the organization identifying departments where potential existed to replace high cost terminal products resulting in significant expense reduction
- › Prepared bi-weekly management scorecards and dashboards communicating status of initiative
- › Reduced monthly reporting time by over 80% for market data administration staff

## **D. Projects for Major Global Exchanges and Index Developers**

### **Commercial Optimization and Market Studies**

#### **Review of Direct Data Feed Pricing and Formats**

Performed a market study of over 50 end-user firms and vendors to obtain feedback on direct data feed pricing, data feed formats, and access methods.

- › Developed surveys for market data fees and data feed format and access methods targeting end-user firms and vendors
- › Developed alternative pricing scenarios based on data feed licensing and end-user access fees



- › Interviewed over 50 end-user firms and vendors to elicit feedback on pricing, data feed formats, and data feed access methods
- › Analyzed results to provide exchange with a comprehensive market study to guide strategic development of future data feed products

### **Market Data Commercial Optimization Study**

For an emerging market exchange, J&J performed a market study and market data commercial analysis of eight strategic exchanges, providing critical guidance on the development of a new commercial model for market data use and distribution, and creation of a consolidated up-to-date market data vendor agreement.

- › Leveraged J&J's global knowledge of the commercial programs of exchanges to identify eight strategic programs to analyze
- › Obtained and reviewed annual reports for those exchanges in the study where available to identify level of revenue generated by market data operations and root causes of growth
- › Provided guidance regarding development of a standard market data distribution contract relevant to six segments including traditional data vendors, end-user firms, and internet data providers

### **Market Study for New Market Data Product Offering**

- › Analyzed industry trends and competition to determine opportunities for commercializing a new market data offering
- › Developed pricing strategy and distribution method based on analysis of potential market and unique value of data
- › Documented legal and regulatory obstacles to commercializing product; provided recommendations for overcoming barriers
- › Interviewed industry participants, end-users, and competitors to determine market reaction to new product

### **Compliant Creation and Distribution of Derived Data Products**

For a global index developer, leveraged exchange contacts/relationships and our experience with exchange protocol to verify and document policies concerning requirements and fees applicable to the creation of derived data products, including securing, completing, and submitting appropriate documents needed for complete compliance with exchange rules.

- › Ensured compliance with diverse market data policies governing the creation of derived data products for over 70 exchanges
- › Contacted exchanges, determined appropriate requirements for index development, and documented policies for referral and future use
- › Completed and submitted numerous diverse agreements and system descriptions required by the exchanges for such licensing

## **Contract Terms-and-Conditions Cataloguing**

- › Reviewed market data contracts executed by a major North American equities exchange
- › Created an inventory of the relevant terms and conditions of the market data contracts identifying and documenting relevant terms and conditions
- › Conducted a licensing gap analysis to identify issues with the exchange's use of market data to create and distribute indices.

## **Project Management/ Vendor of Record Assistance**

### **Vendor of Record Application Management and Client Onboarding Process Development**

Assisted new exchange business-unit in achieving vendor of record status with various North American, European, and Asia equity and options exchanges and Alternative Trading Venues (ATV).

- › Developed material for each exchange and ATV application including systems information and technical diagrams
- › Obtained and completed all exchange and ATV application documentation
- › Created a matrix of policies and fees for client comprehension of liabilities
- › Implemented all direct feed requests
- › Developed managed on-boarding process to be used for client's customers
- › Obtained all relevant documentation and crafted templates for customer use scenarios
- › Developed user manual for client personnel managing customer applications and detailing all requirements and process steps

## **V. Staff Augmentation**

### **Client Type: Global Investment Bank**

#### **Staff Augmentation: Market Data Inventory Migration Support**

Supplied experienced resources for an extended period to perform critical market data administrative functions while the regular staff handled workflow pertaining to complex migration of data between market data inventory systems.

- › Liaised with sourcing and finance teams to ensure declaration requirements are implemented
- › Managed monthly and quarterly reporting requirements to exchanges and vendors
- › Managed requests for new and changed services

### **Staff Augmentation: Market Data Manager**

Supplied managerial presence to market data administration team while company supervisor was on extended leave, providing guidance and leadership while managing ongoing challenges and changes inherent in the market data administrative world.

- › Acted as interim manager for the Americas Market Data Administration team, supervising daily inventory maintenance and permissioning procurement
- › Managed multiple inventory changes as a result of exchange consolidations and policy changes
- › Assisted in the development and documentation of a global procurement and control process for access to market data through a major global vendor
- › Analyzed and resolved numerous invoice issues, working with vendors and businesses to come up with quick and appropriate responses

### **Client Type: Major US Exchange**

#### **Staff Augmentation: Account Manager**

Supplied account management support to the market data services department while multiple team members were out on extended leave.

- › Executed the data feed application process (Exhibit A approval) for new and existing data distributors ensuring that all contractual requirements were met and systems were updated
- › Reviewed vendors technical support and developer accounts ensuring set-up in both the inventory and billing system were correct
- › Processed monthly MISU reports for clients

## **VI. Data Usage and Licensing Audits**

### **Client Type: Global Investment Bank**

#### **Market Data Licensing Review and Gap Analysis**

For a Top Tier Global Investment Bank, performed an internal review and assessment of market data usage within the firm to ensure proper exchange licensing was in place and managed within the inventory system.

- › Researched/reviewed exchange invoices; analyzed the market data inventory to identify licensing managed by the administration team
- › Developed comprehensive inventory of application market data use-cases

- › Obtained and analyzed over 75 exchange contracts to understand licensing requirements
- › Identified and quantified potential licensing gap analysis
- › Assisted in the preparation and submission of required documentation to exchanges
- › Assisted the market data administrative team in understanding new fees and facilitating proper set-up in the inventory system

### **Major Index Developer Audit Preparation and Response**

Assisted client with the management of an audit performed by a major global index developer.

- › Reviewed client index desktop usage and reporting
- › Reviewed client applications sourcing index data
- › Created client analysis of the audit period
- › Reviewed index agreements covering the audit period
- › Reviewed official audit report
- › Developed client response to audit findings
  - › Clarified client position on unit of count
  - › Provided details on applications in question
  - › Calculated client financial reporting position for the audit period

### **Exchange Audit Preparation and Response**

Assisted client with the management of an audit performed by a major European exchange.

- › Reviewed client market data desktop usage and reporting
- › Reviewed client applications sourcing exchange data
- › Created client analysis of the audit period
- › Reviewed exchange agreements covering the audit period
- › Reviewed official exchange audit report
- › Developed client response to exchange audit findings
  - › Clarified client position on unit of count
  - › Provided details on applications in question
  - › Calculated client financial reporting position for the audit period
- › Assisted client in face-to-face meetings with exchange personnel and auditors

### **MISU Audit Services**

Reviewed Multiple Instance Single User (MISU) reporting process for compliance with New York Stock Exchange policy.

- › Confirmed MISU reports included all users in the firm's inventory system
- › Confirmed that the firm's inventory system accurately reflected permissioning
- › Confirmed MISU reports were presented in the required New York Stock Exchange format
- › Confirmed records were retained in compliance with exchange policy
- › Verified employment status of reported users with the human resource department

### **Per-Query Audit Services**

Reviewed quote metering systems for compliance with New York Stock Exchange's query distribution policy.

- › Confirmed that the quote metering system recorded all quote requests
- › Confirmed the quote metering system produced accurate usage reports for the exchange
- › Confirmed that the market hours and holidays recognized by the quote metering system are the actual real-time hours and holidays of the exchange
- › Confirmed capping was performed in compliance with exchange policy

### **NYSE Indirect Bill Audit Services**

Reviewed software and reporting procedures to ensure compliance with the New York Stock Exchange's indirect bill guidelines.

- › Reviewed that the application(s) used for redistributing NYSE data and the specific entitlement control software utilized
- › Confirmed procedures for entitling data and permissioning users
- › Confirmed compliance with documentation requirements
- › Confirmed controls over existing inventory management and reporting processes

## **VII. Other J&J Professional Services**

### **A. Trade Process Improvement**

Jordan & Jordan provides recommendations for changes in workflow, systems and procedures for handling trades, operations and client servicing that consider user needs,

system requirements, data management, and organizational structure. Representative engagements include:

- › For a global institution, prepared the international and domestic order routing architecture including total cost of ownership of current systems, documentation of existing functionality and flows, desired functionality as well as recommendations for in-house or vendor alternatives. Strategy included leveraging message-oriented middleware technology and standards.
- › For a major US derivatives exchange, conducted an assessment of their mission critical trading system to determine the underlying causes of occasional outages and service disruptions, and made recommendations for immediate corrective action and longer-term plans to maintain availability with significant increases in volume.
- › For a large retail broker-dealer seeking an efficient order management process for equities, options, fixed income and mutual funds, examined both build and buy alternatives, and created a roadmap suggesting an appropriate route for each security type, and recommended follow-ups with specific vendors.
- › For a major broker dealer, performed an in-depth order routing and execution analysis, identifying significant opportunities to increase their cost effectiveness and improve their best execution and compliance requirements.
- › Engaged by SIFMA acting in the interests of dealers, and given Federal regulators' concern with market resiliency, as Project Manager Jordan & Jordan is coordinating the industry initiative commonly referred to as "NewBank". The project involves various Regulators of the U.S. government financial markets (including the Board of Governors of the Federal Reserve System, the Federal Reserve Bank of New York, the U.S. Treasury, and the U.S. Securities and Exchange Commission), the two primary U.S. clearing banks (JPMorganChase and The Bank of New York Mellon), major dealers in U.S. government securities, and large institutional investors. The goal is to create a "contingency plan" designed to mitigate market disruption and preserve liquidity in the U.S. government securities markets under certain circumstances.

## B. Vendor Selection

Jordan & Jordan combines an understanding of the securities industry from a business, technology and operational perspective with a disciplined approach to vendor selection. Our services include vendor qualification, development and distribution of RFI/RFPs, analysis of responses in the form of a requirements matrix. Taking into account functional and non-functional (e.g., cost, existing technology strategy), we evaluate vendor alternatives using objective criteria to provide an informed recommendation.

Representative engagements include:

- › Completed the RFI and selection process for a major global financial information vendor to rebuild its ticker plant and data distribution platform

- › Assisted multinational broker dealer in selecting a clearance processing provider
- › For a national retail broker dealer, examined build vs. buy alternatives for order management systems to handle equities, options, and fixed income securities. Performed requirements analysis and provided recommendations for follow-up with specific vendors for each security type
- › Drove the RFI process for a major investment bank in selecting a buy vs. build strategy for reference data
- › For many clients, established a framework and criteria for vendor selection and recommendations for fixed income pricing services and reference data
- › Guided the vendor selection process for a broker dealer to meet trade-processing requirements for mortgage-backed and related securities
- › Developed high level requirements and overall RFP for a replacement price dissemination system for an international derivatives exchange
- › Drove the RFP process at a major hedge fund for the selection of a market data management system
- › Assisted a major mutual fund in selecting/upgrading market data distribution technology
- › Compared retail broker workstation alternatives, including proprietary and third party packages, based on user requirements and technology/operational considerations; project included RFI development and response evaluation

## C. Data Management Strategy

Our technology experts have implemented large-scale multi-asset reference data systems for major hedge-funds and investment banks. Together with a disciplined approach to reference data vendor selection and implementation, we have refined a testing strategy known as the Jordan & Jordan Reference Data Testing Framework (RDTF) that can be customized and implemented to fit the specific needs of an engagement.

Representative engagements include:

- › For a premier hedge fund, created a normalized data model for fixed income securities, provided vendor data analysis, designed arbitration and validation rules, wrote test plans and test scripts, reviewed test results
- › For a major broker/dealer, developed a request for information (RFI) on reference data management solutions, disseminated to the top five vendors, analyzed responses and provided recommendations for prioritization and next steps in vendor selection

- › For a primary industry utility, documented business practices in the U.S. municipal and corporate bond new issue process to develop standardized data formats for increased accuracy, timeliness and ease of data collection/distribution/access
- › To support the risk model and securities processing activities of a major prime broker, created a normalized data model for implementation of a fixed income securities master; performed vendor data analysis, designed validation rules for data cleansing and provided support for integration of data into business unit applications
- › For a major service bureau, conducted business requirements research for a corporate actions notification and processing service
- › Conducted global research study for a major provider of standing settlement instructions seeking ways to increase breadth and depth of their product offerings and discover key value points
- › Created a structured framework for client evaluation of vendor data, conducted numerous vendor selection projects on behalf of clients

## D. Strategic Marketing

Representative engagements include:

- › For numerous clients, particularly financial information vendors, conducted extensive primary market research to support product development initiatives with detailed information related to business requirements, user preferences, distribution channels, pricing structures, and other information critical to successful product introduction
- › Completed an in-depth analysis and provided strategic direction to a major financial information provider which addressed the entire trading process and the implications of regulation, technology, ECNs and new market entrants on their value proposition
- › For a major securities transaction processing service bureau, identified securities processing needs (including data/content needs) of operations officers in global securities firms and recommended strategic positioning for entry into the European marketplace
- › For an international stock exchange, evaluated user needs related to a full range of securities industry activities (syndication, research, and trading processes) to support the information strategy component of their strategic planning initiative
- › Conducted market research to support a joint venture / new product initiative aimed at the buy-side; topic was data consistency across the investment process from trade decision and support through performance reporting; research covered mutual funds, pension funds, hedge funds and separate accounts managers



- › Analyzed straight through processing trends and their impact on a financial information database vendor's current and planned initiatives, used for strategic planning process
- › Recommended specific market opportunities for a major equities data vendor to develop and introduce fixed income information services
- › For a major international exchange, identified the market opportunity to become an aggregator/disseminator for other exchanges; developed a market-entry strategy as an information provider

## E. Technology Services

- › For a major international software and services provider, developed requirements and assisted in the development of a data distribution platform. Designed and developed several real-time data feeds including consolidated order book and market depth capabilities. Presided over performance testing and pilot client implementations.
- › For a top-tier market data vendor, developed technology and provided early assistance in developing and operating prototypes for their next generation of ticker plant technology including data driven architecture, data modeling and data feed features consulting services. The efforts resulted in a new data feed product offering.
- › For a major US derivatives exchange, developed FAST decoding software and tested / verified FAST 1.1 standards compliance for a new market depth data feed. In this assignment, J&J staff also assisted the exchange with developing specifications for the core software development requirements to produce the new data feed.
- › For a major equities and options exchange, assisted in identifying areas for improvement and created an action plan to increase reliability and availability of the exchange's proprietary technology including order routing, matching and market data systems. For this client, J&J provided specialized financial technology specialists with broad trading systems expertise.
- › For a major international derivatives and stock exchange, assisted in the development and implementation of several trading technology and market data technology improvements including replacement of the exchange's ticker plant technology and reconfiguration and adaptation of the matching engine to support new products and business policy changes.
- › For a top-tier index provider and news service, documented current and anticipated functional and non-functional requirements of an equities ticker plant, drafted a formal vendor RFI, solicited vendor responses, analyzed feedback and provided a technology roadmap.
- › For a major retail broker and correspondent services firm, reviewed the current ticker plant technology and operations, solicited vendor proposals and developed recommendations to achieve improved services and cost structure. For this same

client, we also conducted several additional projects including review of requirements and potential solutions for active trader market data technology and evaluated alternatives for direct exchange feeds.