An Architecture for Intelligent Trading
Agenda

• The Need for Intelligent Trading
• The Challenges to Address
• The Value of the Platform
• Big Data in Motion and its Application to Trading
• A Modern Architecture for Intelligent Trading
• Wrap up and Q&A
The Need for Intelligent Trading

The Challenges to Address

The Value of the Platform

Big Data in Motion and its Application to Trading

A Modern Architecture for Intelligent Trading

Wrap up and Q&A
“In the past 10 years, automated trading has risen from 5% to over 80% of all trades done each year. The ROI of intelligent automation on Wall Street cannot be computed – it’s worth billions and is a matter of survival.”

- Head of trading, top tier broker dealer
The Need for Intelligent Trading

The Challenges to Address

The Value of the Platform

Big Data in Motion and its Application to Trading

A Modern Architecture for Intelligent Trading

Wrap up and Q&A
“The ability to capture the right information at the right time and act on it preemptively for a competitive advantage” — that’s the Two-Second Advantage.

– Vivek Ranadivé, TIBCO Founder and CEO
The Need for Intelligent Trading
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Wrap up and Q&A
“Business value doesn’t come from building faster applications; it comes from building applications faster.”

- Head of algorithmic trading, top-tier broker dealer
Analyze…Adjust…Deploy…Repeat

Trading strategy not making money

Adjust trading algorithm

Deploy
• The Need for Intelligent Trading
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Case Study: Intelligent Algorithmic Trading

• Situation: Wall Street Imperative to Deploy Algo Trading
  – In the last 10 years, automated trade flow has gone from 5% to 80%
  – Innovative algorithmic trading technology and time to market are critical to survival in the capital markets

• Problem: How to Automate?
  – Custom coding? Packaged applications? Event Processing?
  – Streaming analytics are essential to effective algo trading

• Solution: TIBCO for Algorithmic Trading
  – With TIBCO, algorithms are developed 3-5X faster than if traditional technologies were used like databases or application servers
  – Provides low latency event processing, aggregation, scale, and visualization

• Result: Event Processing Provides Pure Competitive Advantage for Algo Trading
  – Quants and IT communicate and build systems more quickly, with built-in performance, scalability, and connectivity.

“In three months we were up and trading, and we were the fastest auto quoter on the market.”

- Head of algorithmic trading, top-tier broker dealer
Reference Architecture: Automated Trading

Tick Store

Event Processing
- Monitor
- Algorithms
- HFT
- Real-time Risk

MATLAB
- Analytic
- Analytic
- Backtesting

Historical Analytics
- Analytic
- Event Analytics

Real-Time Analytics

Real-Time Analytics

Execution Consulting Services

Risk Management

Quantitative Research

Streaming Market Data
- Reuters, NYSE, etc.

Automated Trades

Reuters, Twitter, etc.
- Streaming news, social media, etc.

Quants

Traders
Real-Time Monitoring & Fraud Detection

“Event-driven monitoring and fraud detection make it easy for us to whittle 100 million trading events down to the few that matter and ACT in real-time.”

- Managing Director, Global Brokerage

- Situation: Moving Data Requires Event-Driven Monitoring
  - Streaming machine-generated data overpowers existing end-of-day analytics and reporting infrastructure

- Problem: Existing Commercial Products Not Real-Time
  - Existing products are designed for ETL-style capture and analytics, not for streaming data

- Solution: Event-Driven Monitoring with StreamBase
  - Event Processing for event stream aggregation, correlation, and action
  - LiveView for monitoring
  - Integration with Hadoop and streaming machine-generated data

- Impact: Market Disruption, First Mover Advantage
  - Firms that are first to market with real-time monitoring and fraud detection capture a distinctive advantage in the market and save millions due to electronic-induced outages and fraud.
Reference Architecture: Monitoring & Fraud Detection

Event Processing:
- Real-Time Analytics
  - Temporal Correlation
  - Stream Analysis
  - Alerting
  - Real-time Data Aggregation

Real-Time Visualization

Transactions, machine data

Application Monitoring

System Latency Monitoring

Analytics
Situation: Major Asset Manager Needs Better and Faster Insight for Price Discovery
- Which trades are slipping? How close to target are we for participation rates? How can we adjust our trading in the market now?

Problem: How Make Informed Real-Time Decisions?
- Need real-time and historical trading analytics to put intraday trading strategy adjustments in the proper context

Solution: TIBCO StreamBase, LiveView, and Spotfire
- Firm deployed visualization and analytics for traders & portfolio managers to assess real-time and historical trade performance at once.

Impact: Improved Intraday Adaptability of Trading Strategies
- Solution helps allow traders and PM’s understand where their trade performance is going, and adjust trading strategies during the day

“We can analyze everything that impacts trade performance, and adjust to it on the fly.”
- Head of IT, Asset Management
Reference Architecture: Intelligent Price Discovery

Event Processing
- Trading Analytics

Real-Time Analytics
- Aggregation

OMS

EMS

Historical Analytics

Traders & Portfolio Managers

Alerts

.NET GUI

FIX

FIX

MQ

DBMS

Proprietary .NET User Interface

FIX Protocol

Thomson Reuters

Kx

DBMS

OMS

EMS

Historical Analytics

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• **White Paper:** “An Architecture for Intelligent Trading”
Thank You

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