

Algorithmic Trading & FIX: Extending the Reach of FIX

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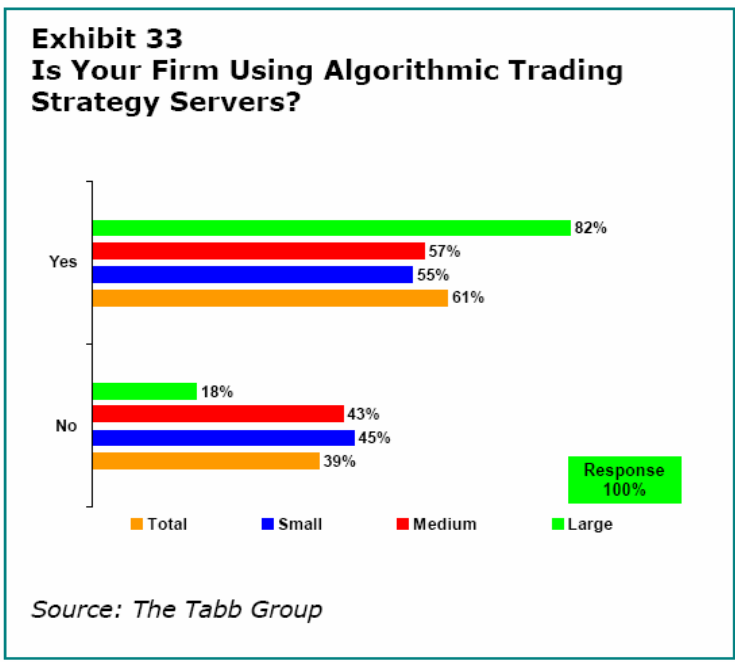
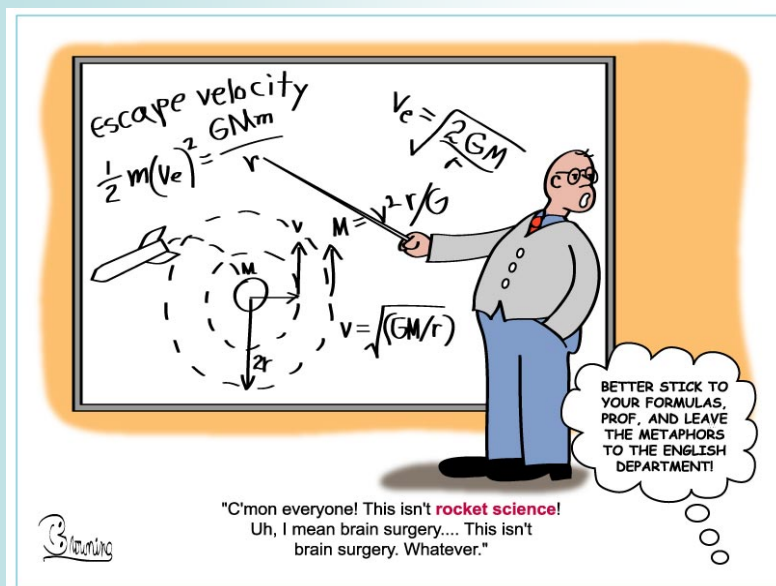
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Algorithms & The Sell-Side

Carl Carrie, Head of Algorithmic & Analytic Trading,
JPMorgan Electronic Execution Services



Algorithmic Trading May Seem like Rocket Science...



A Working Definition

al·go·rithm·ic

tra·ding

^P Pronunciation Key (l g - r th m k)

(tr A ding)

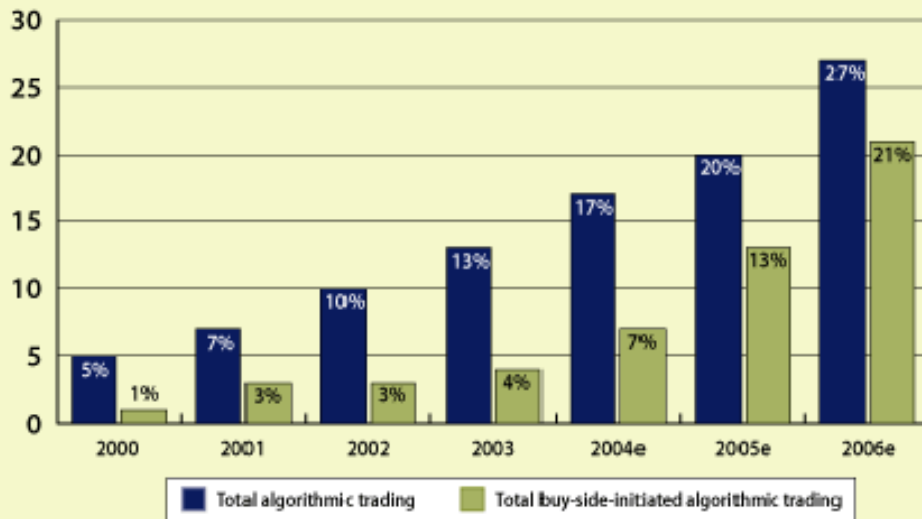
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1. VWAP - No!
 2. Rocket Science - No!
 3. Custom FIX Tags - No!
 4. *Trading where a computer program performs the decision-making around what quantity, price, order-type, wait-time and size to use when working an order.*

How Big is Algorithmic Trading?



TowerGroup Projects Algorithmic Trading Volume to Double by Close of 2006

Explosive Growth Expected in US Equity Algorithmic Trading (2000–2006)



Source: TowerGroup

“Fragmentation of liquidity and lower commission price points are driving the buy-side toward the use of algorithms, while institutional brokers are looking to the same new tools to lower their trading costs to support those reduced commissions.

These factors will drive strong continued growth for this area. TowerGroup projects total algorithmic trading volume to *double* through 2006, with buy-side initiated algorithmic trading *tripling* in that same timeframe.”

Here is an Algorithmic Trading Example

Symbol:	CAH
Side:	Buy
Shares:	295,100

Company Profile	
Company	CARDINAL HEALTH INC
Mkt Cap	19.99 (Billion USD)
Industry Group	Health Care Equipment & Svcs

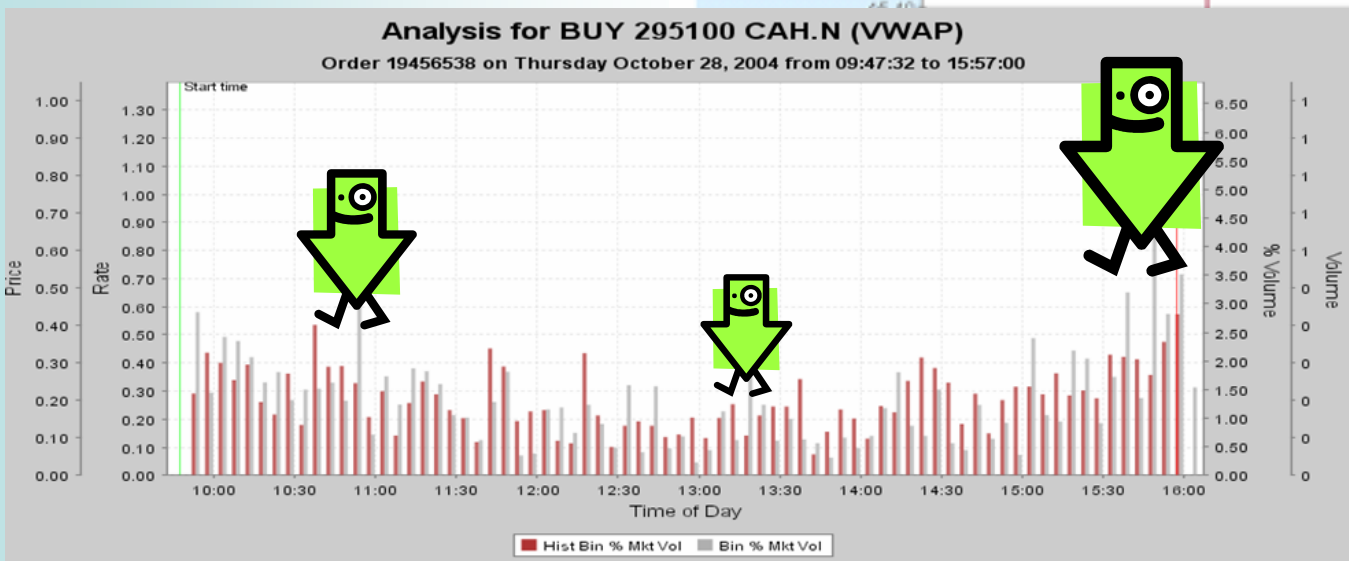
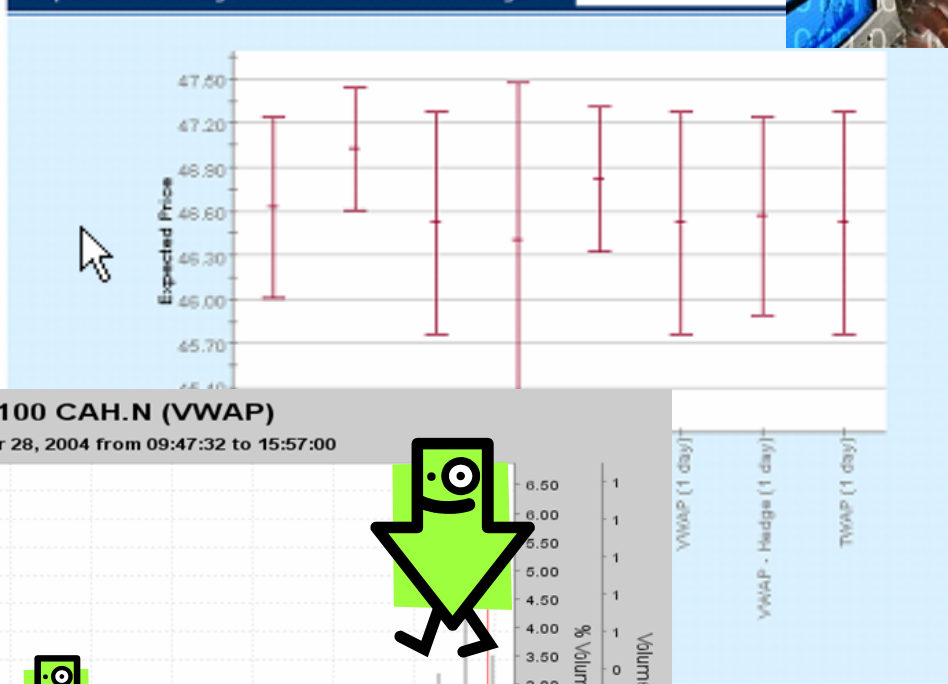


Crunch the numbers...Push a button

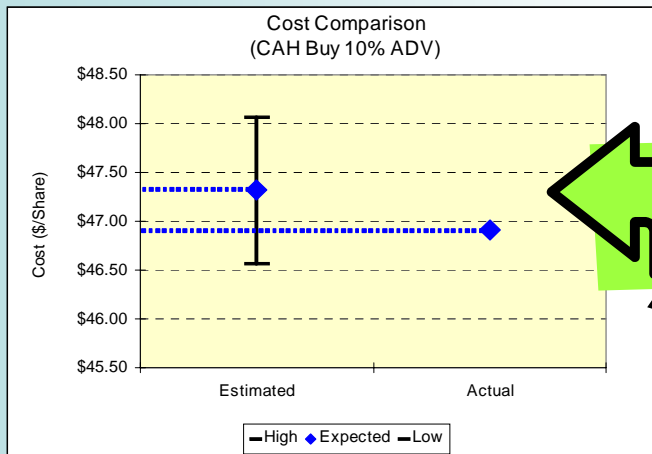
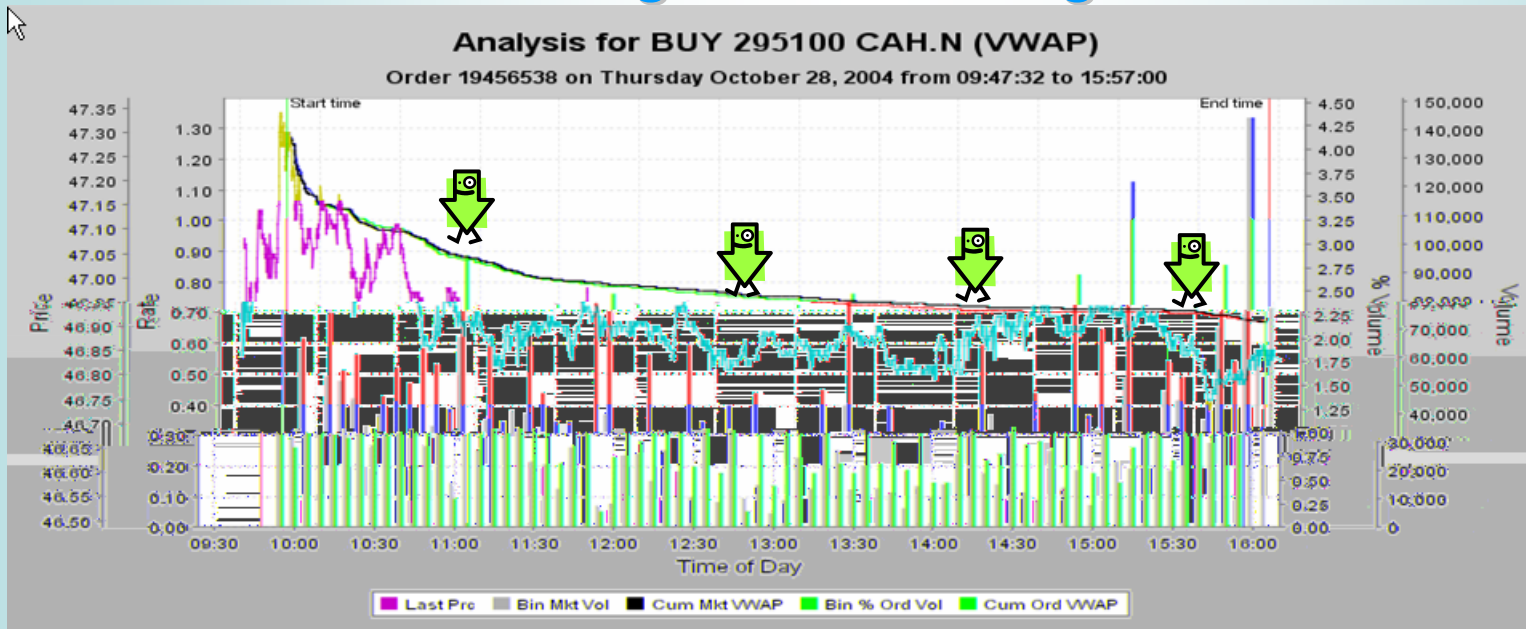


Trading Statistics	
ADV	2,946,336
Expected Daily Volume	2,946,336
RDV	1,256,436
Price Volatility	45%
Volume Variance	94%
Avg Trade Size	1,312
Avg Block Trades	0%
Beta	1.7
Tracking Error	1.2%
Trading Difficulty	High

Expected Trading Cost for Various Strategies



...And Algorithmic Magic Occurs...



..and this is why it is EASY to get excited about the potential of Algorithmic Trading!

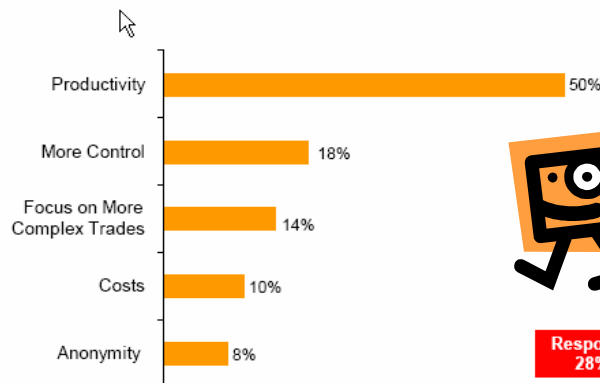


Many Kinds of Trading Algorithms

- Order Working/Slicing
 - TWAP/VWAP/% of Volume
- Contingent Algorithms
 - Pairs
- Hedging
 - Delta/Gamma Hedging
- Multi-Asset Class
 - FX+Equity
- Arbitrage
 - Risk Arb, Index Arb, Stat/Arb, ADR Arb
- Automation/Specialty
 - Auto-Hedging, Auto Market Making, Corporate Buybacks
- Implementation Shortfall
 - Implementation Shortfall/Execution Shortfall/Arrival Price/Strike
- Basket/List
 - Optimized Trading List
- Smart Orders
 - Sweep, Peg/Float, Spread-Capture, Low-Liquidity, Smart-Route

Why is Algorithmic Trading So Important to the Sell-Side?

Exhibit 36
What Are the Advantages of Algorithmic Trading?



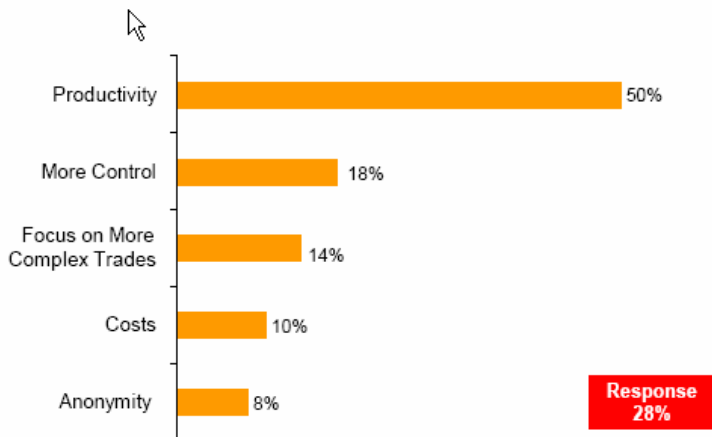
Source: The Tabb Group

- **Automate** low value orders
- **Participate** in all payment buckets and rapid growth of DAE and DMA flow
- **Recapture** Direct-to-ECN DMA flow
- **Quantitative Color** and better risk control
- **Algorithmic Synergies** in Auto Market Making, Risk Bids, Program Trading and Stat/Arb

And More...

Why is Algorithmic Trading So Important to the Sell-Side? (continued)

Exhibit 36
What Are the Advantages of Algorithmic Trading?



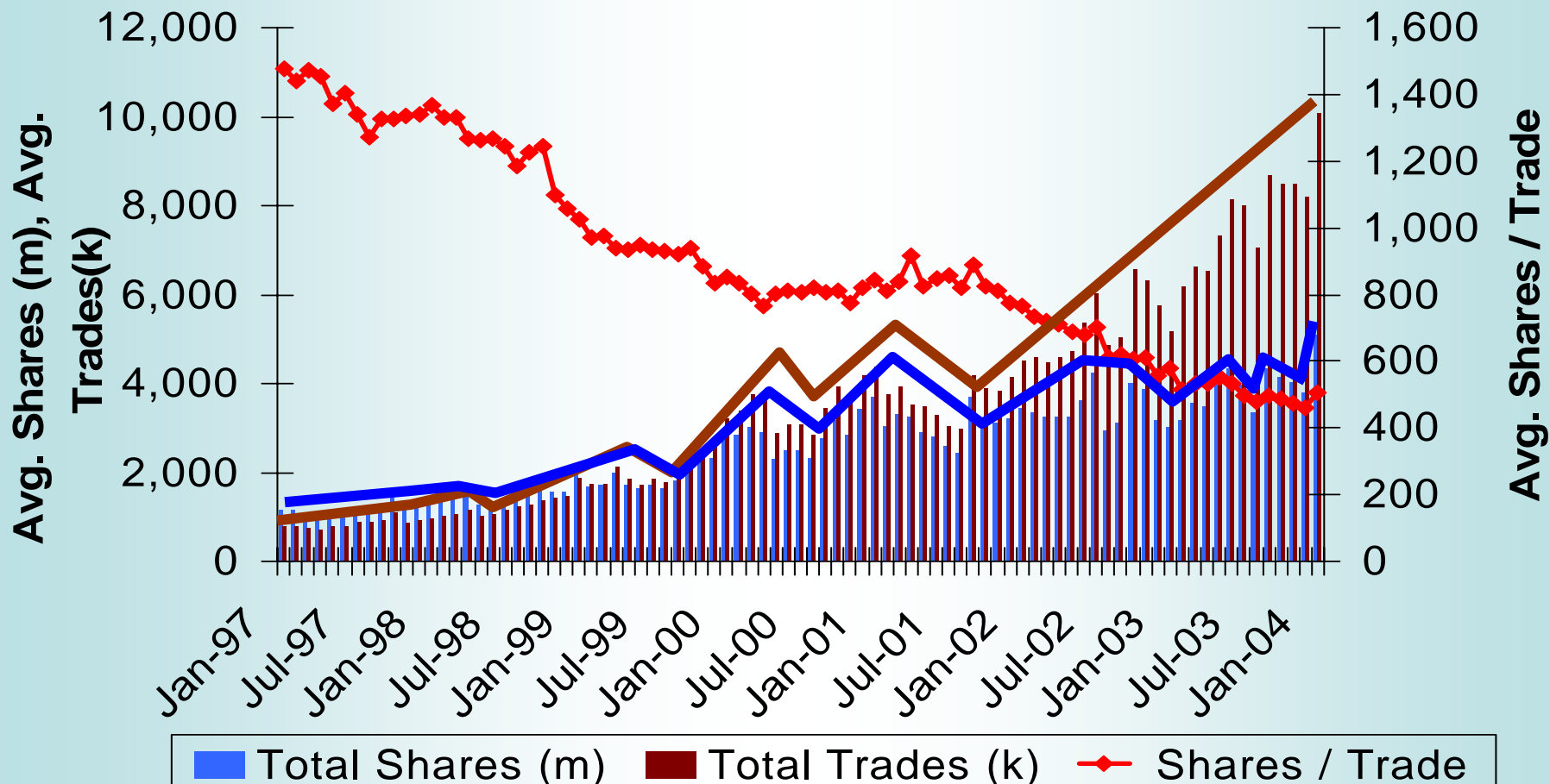
Source: The Tabb Group

- **Ancillary services** like Pre and Post- trade analytics
- **Flow Optimization** as in Internalization, Price Improvement, Crossing
- **Improved trading** performance

But There is One Other Big Reason...

The Market has Shifted to Program & Algorithmic Trading

US Equity Share volume and trades



Source: Tabb, NYSE, Nasdaq, Cincinnati, & ArcaEx

FPL Algorithmic Trading and DMA Working Group Update

Scott Atwell, Manager of FIX Trading and Connectivity, American Century, FPL Global Steering Committee Co-Chair & FPL Global Technical Committee Co-Chair

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Impetus for the FIX Algorithmic Trading Working Group

- Over the last year there has been a **growth in the number of services** offered by brokers to the buy side, particularly in the area of DMA (Direct Market Access) and Algorithmic Trading.
- The **interface requirements** for each service **vary from broker to broker**.
- Although the internal workings of Algorithmic Trading engines are proprietary and business-sensitive, the opportunity exists to ensure that the various interface requirements from buy side systems to the Algorithmic Trading engines are properly covered by the FIX protocol.
- In 3Q 2004, FPL established a working group to focus on this area.
 - **FPL does not want the protocol to become fragmented due to algo trading and is trying to provide a flexible framework for the community to work with**

Today's Situation

- Multiple approaches for connecting to Algorithmic engines
- Reluctance by brokers to share specifications
- Numerous sponsored OMS developments
- Lack of coordination so that there is a standard

Multiple approaches for connecting to Algorithmic Engines

- Majority of users use FIX 4.0 or FIX 4.2
- **Common options are:**
 - The **“text option”** – using predefined text in TargetSubId(57) or Text(58) to identify the desired strategy
 - The **“18/40 option”** – using ExecInst(18) or OrdType(40) to identify the desired strategy
 - The **“6000 User Defined option”** – use of the custom tags (6061 – 6067) registered by CSFB
 - The **“4.4 TargetStrategy option”** – using the TargetStrategy tags (847-850) available in FIX 4.4 even in pre-4.4 versions

The “text option”

- TargetSubID(57) or Text(58) hardcoded to “VWAP”, “TWAP” etc
- All other fields as per a normal single order

The “18/40 option”

- Combination of OrdType(18) and ExecInst(40).

The “6000 User Defined option”

User-defined fields registered by CSFB

- ExecServProd(6061). Values “VWAP”, “TWAP” etc
- StartTime(6062). Default Now.
- EndTime(6063). Default Day.
- MaxPctVolume(6064).
- ExecutionStyle(6065). Measure of aggressiveness--values 1 to 6.

The "4.4 TargetStrategy option"

Fields defined in FIX 4.4

847	TargetStrategy	int	The target strategy of the order Example Values 1 = VWAP 2 = Participate (i.e. aim to be x percent of the market volume) 3 = Minimize market impact 1000+ = Reserved and available for bi-laterally agreed upon user defined values
848	TargetStrategyParameters	String	Field to allow further specification of the TargetStrategy – usage to be agreed between counterparties
849	ParticipationRate	Percentage	For a TargetStrategy=Participate order specifies the target participation rate. For other order types this is a volume limit (i.e. do not be more than this percent of the market volume)
850	TargetStrategyPerformance	float	For communication of the performance of the order versus the target strategy

Reluctance by brokers to share specifications

- Currently most brokers, with the notable exception of UBS, are unwilling to share their interface specifications. Despite the fact that the content in most cases is similar to the options explained over the last few slides.
- **The algorithms may be rocket science but the interfaces aren't.**

Broker-sponsored OMS development projects

- A number of brokers have sponsored bespoke development projects by the Order Management System vendors to provide access to their algo engine
- Good revenue stream for vendors
- Not good for standards

FPL Algorithmic Working Group – Next Steps

- Inventory the various approaches used in practice today
 - “Encourage” brokers and algo providers to share their interface specs
 - Identify commonality amongst strategies & related parameters (what?)
 - Identify approaches to representing this data in FIX (how?)
- Improve documentation and provide recommendations
 - Enhance FIX 4.4 documentation of the use of TargetStrategy fields
 - Document recommended option(s) for users of FIX 4.0 – 4.3
 - Document migration path to FIX 4.4

Algorithmic Trading: A Buyside's Perspective

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American Century
Investments
Genuine. Results.

American Century Investments

- Multi-disciplined, global asset management firm
- Manages approximately \$90 billion in assets for more than 1.5 million shareholders
- Approximately 1,800 employees
- Headquarters in Kansas City, Missouri
- Formerly named Twentieth Century and The Benham Group
- Live with FIX since April 1996
- Progressive users of alternative and electronic execution services for over 15 years

ACI's Use of Electronic Trading

- Over 50% of US trading is conducted using non-traditional means
 - ECNs, crossing networks, buy-side liquidity matching, etc
 - Broker and ECN-provide DMA and Algorithmics
- Significant portion of non-US trading is also conducted this way
- 99.9% of ACI's global equity trading is conducted via FIX

ACI's Use of Algorithmic Trading

- Algorithmic Trading services are provided by both
 - Brokers who have exposed internal capabilities to their customers
 - ECNs who implement algos and can tap in to a variety of other algo service providers
- Algorithmic Trading conducted in:
 - U.S.
 - Europe
 - Asia/Pac
 - Japan

The Need for Algorithmic Trading

- An algorithmic order is chopped up in to many smaller orders each of which adjust their pricing and aggressiveness based upon factors such as:
 - Real-time market data
 - Current status of the order
 - Algorithm's parameters
- More sophisticated algorithms react, predict, and learn through the lifecycle of the trade
- The **reduction in average trade size** has created an environment where it is **often a necessity to use an algorithmic** to effectively trade 100-200 shares at a time in order **to stay active in the volume** and **break up trading patterns**
- Algorithms provide a very powerful tactical trading tool, but quality trading depends on the effective use of strategy and intervention by the trader.

Next Sessions

Lunch: Regulatory Impact and Electronic Trading



Location: Salon AB

Marketing FIX:

Enabling Hedge Funds and Outsourcing

Location:

Salon C

Implementing FIX:

Global Order Routing

Location:

Financial Ballroom

Closing General Session: Debating the Future of FIX

Location: Salon AB

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