Setting the Scene
Electronic Trading and the FIX Protocol

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Topics

♦ Overview of FIX and connectivity
♦ Direct Market Access
♦ Algorithmic Trading
♦ Dark Pools and Smart Order Routing
FIX - Financial Information eXchange

♦ FIX = The Financial Information eXchange Protocol

♦ FIX is a standard way of communicating trading information electronically between brokers, institutions and markets

♦ FIX is not a piece of software, network or a service – it is just a specification of a protocol
FIX - Financial Information eXchange

An example FIX message:

```
BeginString<8>=FIX.4.2  |  BodyLength<9>=182  |  MsgType<35>=Order-Single<D>  |  SenderCompID<49>=Client1  |
TargetCompID<56>=UBS  |  MsgSeqNum<34>=7554  |  SendingTime<52>=20090518-03:02:35  |
SenderSubID<50>=Client1  |  HandlInst<21>=Automated execution order, private, no Broker intervention<1>  |
Side<54>=Buy<1>  |  TransactTime<60>=20090518-03:02:34  |  OrdType<40>=Limit<2>  |
TimeInForce<59>=Day<0>  |  OrderQty<38>=100  |  Symbol<55>=0005  |  Price<44>=60.0000  |
SecurityExchange<207>=Hong Kong Stock Exchange<HK>  |  Currency<15>=HKD  |  Account<1>=1  |
IDSource<22>=CUSIP<1>  |  SecurityID<48>=HK990000055  |  ClOrdID<11>=02682870  |  CheckSum<10>=215
```

♦ The FIX Protocol supports multiple message types...
  – Single orders
  – Indications of interest
  – Programs / List Trading
  – Allocations/Confirmations

♦ And multiple product types
  – Equities, Exchange Traded Derivatives, FOREX, Fixed Income
Using FIX - How do I get started?

The vast majority of vendor trading platforms support FIX

Bloomberg EMSX — Global EMS

Eze Castle — Global OMS

Trading Screen — Global EMS

TORA — Global EMS
10,000+ firms use FIX globally

♦ FIX is the market standard for electronic communication between Buy and Sell side

♦ Developed, owned and managed by leading brokers, vendors and institutional investors to promote increased trade connectivity
Connecting electronically via FIX gives access to a wide range of services.
Clarifying the Terminology

♦ Worked (or Care) order flow
  – Sending electronic orders to your usual sales-trader for manual acceptance
  – Traditional trading process similar to telephoned orders

♦ Direct Market Access (DMA)
  – The ability of a buy-side trading desk to route orders directly to an execution venue without intervention by a sell-side trader
  – The sell-side provides memberships, technology, trade support and credit
  – Comprehensive automated checks and controls are in place to protect both the client and the broker

♦ Algorithmic Trading
  – Placing an order of a defined quantity into a strategy that automatically generates the timing and size of market orders
  – Typically constrained to trade to a benchmark, price or time
  – In-house or vendor provided models or broker provided models

♦ Smart Order Routing
  – Algorithmic model for managing multiple liquidity sources
  – Can be applied to both DMA and Algorithmic trading
## Growth in DMA and Algorithmic trading

### Changes to European Landscape

<table>
<thead>
<tr>
<th>% Turnover</th>
<th>Low Touch</th>
<th>High Touch</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>28%</td>
<td>72%</td>
</tr>
<tr>
<td>2008</td>
<td>32%</td>
<td>68%</td>
</tr>
<tr>
<td>2009 (e)</td>
<td>36%</td>
<td>64%</td>
</tr>
<tr>
<td>2010 (e)</td>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Source: The TABB Group, 2008
The drivers towards DMA and Algorithmic Trading

♦ **Control**  
Client wants more control over how the order is executed

♦ **Speed**  
Sometimes want to lift an offer “right now”

♦ **Anonymity and Confidentiality**  
Wants to trade in secret for a variety of reasons

♦ **Cost**  
Low-touch execution leads to a lower execution charge

♦ **Unbundling**  
Payment model allowing clients to decouple execution from advisory

♦ **Fragmentation and Liquidity (US and EU now, Asia future)**  
Multiple venues for trading the same stock. Algos make it easier
Several types of algorithms have evolved

♦ Schedule driven algorithms
  – Structured with fixed start and end, adheres to schedule
    – VWAP, TWAP, AtOpen, AtClose

♦ Market driven algorithms
  – Reactive, monitors real-time activity, reacts to events
    – Volume Inline, Price Inline, Implementation Shortfall, etc

♦ Liquidity Seeking algorithms
  – Pro-active liquidity seeking algorithms, most sophisticated
    – e.g. UBS TAP intelligently accesses multiple ‘dark’ and ‘lit’ pools

♦ Selecting the right algorithm is key
  – Selecting **when** to use algo’s and **which** algorithms to use
APAC Client Algorithm Usage

Seeing a steady move away from VWAP to more price sensitive and liquidity seeking algorithms
Dark Pools - Why all the buzz?

- Dark pools are theoretically the holy grail for institutional buy-side client
  - Trading without impact
  - Moving large orders quickly and with limited risk

- Challenging the status-quo
  - New market venues in addition to the traditional exchanges

- Creating competition
  - New companies means new marketing, new buzz
  - Everyone striving to get involved

(a dark pool)
Dark Pools

♦ In the US market dark pools have gone from relative obscurity pre-2002 to over 40 venues that capture over 12% of US equity market volume

♦ Europe has seen even faster change
  – Chi-X already seeing almost 20% of FTSE 100 volume
### Evolution of the Liquidity Pool

#### Growth of Dark Pool Volumes in the US

<table>
<thead>
<tr>
<th>% Turnover</th>
<th>Dark Liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2%</td>
</tr>
<tr>
<td>2008</td>
<td>8%</td>
</tr>
<tr>
<td>2009 YTD</td>
<td>12%</td>
</tr>
<tr>
<td>2011 (e)</td>
<td>19%</td>
</tr>
</tbody>
</table>

Source: The TABB Group Estimates
Defining a dark pool

♦ “Non-displayed liquidity”
  – Displayed liquidity now being called “light pools”
  – Some categorization will include alternative venues

♦ An old concept, new name
  – This has been the role of brokers for years

♦ Categorizing dark Pools – by ownership
  – Independent (Liquidnet, BlocSec, Instinet, ITG Posit, etc)
  – Broker/Dealer internal dark pools (UBS PIN, CS Crossfinder, etc)
  – Consortium owned (BIDS in the US)
  – Exchange owned

♦ Regulatory implications affect it differently in each market
  – Some regulation means it still needs to be report to central exchanges
Smart Order Routing

♦ Whilst common place in US trading and more recently Europe, market fragmentation resulting from new execution venues and dark pools are gradually bringing the concept to the Asia Pacific

♦ The key to effective trading in a fragmented market is not only having connections but how you treat each individual market to maximise trading opportunities whilst minimising signalling risk

♦ For example:

- IOC order limited at CBBO
- Multiple orders are placed in dark pools simultaneously (order is split)
- Sweep based on CBBO
- Preference given to fastest venue where same price on multiple venues
- Probability is based on one weekly historical at stock level
- Re-post dynamically based on where liquidity is currently being seen
In Conclusion - The business case for technology

♦ For “plain” order routing, FIX enhances the business process and is a complement to the phone

♦ But for products and services such as….
  – Direct Market Access
  – Algorithmic Trading
  – Efficient Crossing and Internalisation
  – Smart Order routing

♦ FIX is a prerequisite as these services cannot be accessed or carried out manually!
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