Setting the Scene
Electronic Trading and the FIX Protocol

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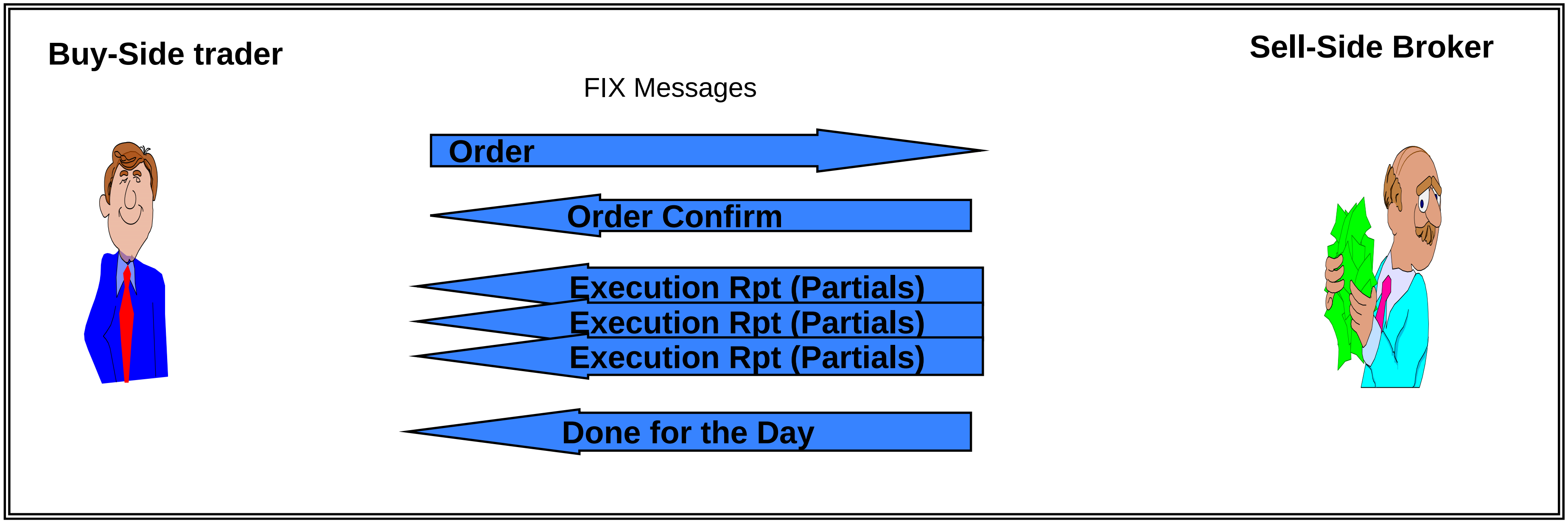
Topics

- 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>=HK99000055 | ClOrdID<11>=02682870 | CheckSum<10>=215

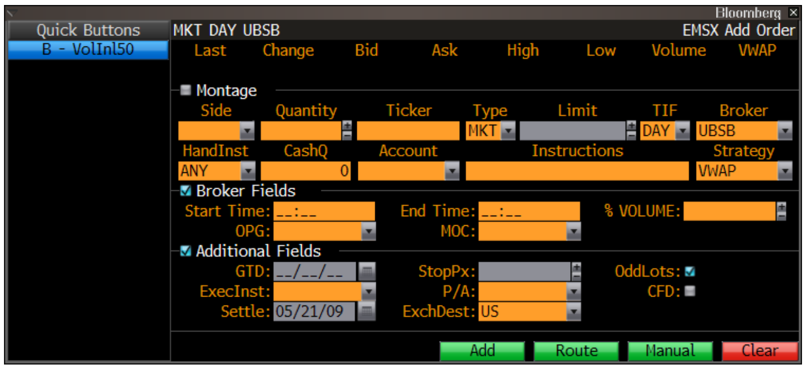
- The FIX Protocol supports multiple message types…
  - Single orders
  - Indications of interest
  - Programs / List Trading
  - Allocations/Confirmations
- And multiple product types
  - Equities, Exchange Traded Derivatives, FOREX, Fixed Income

3

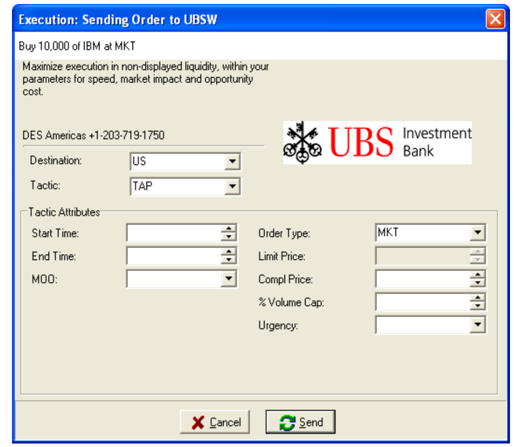
Using FIX - How do I get started?

The vast majority of vendor trading platforms support FIX

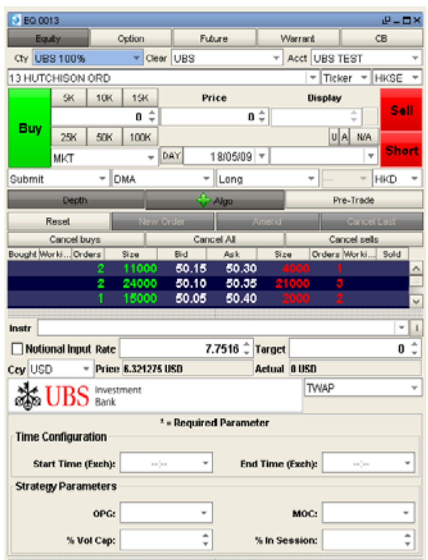
Bloomberg EMSX — Global EMS



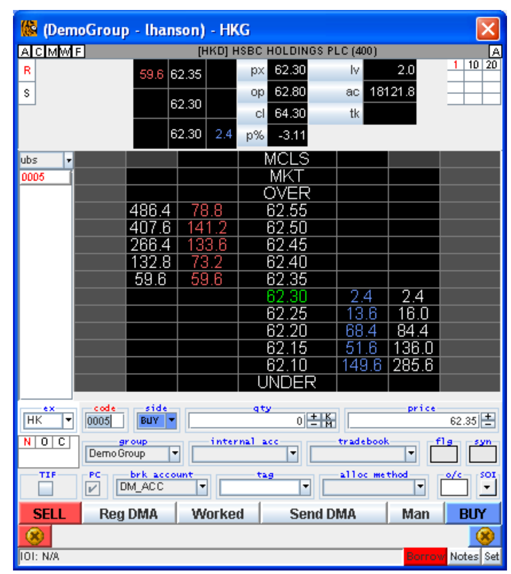
Eze Castle — Global OMS



Trading Screen — Global EMS



TORA — Global EMS



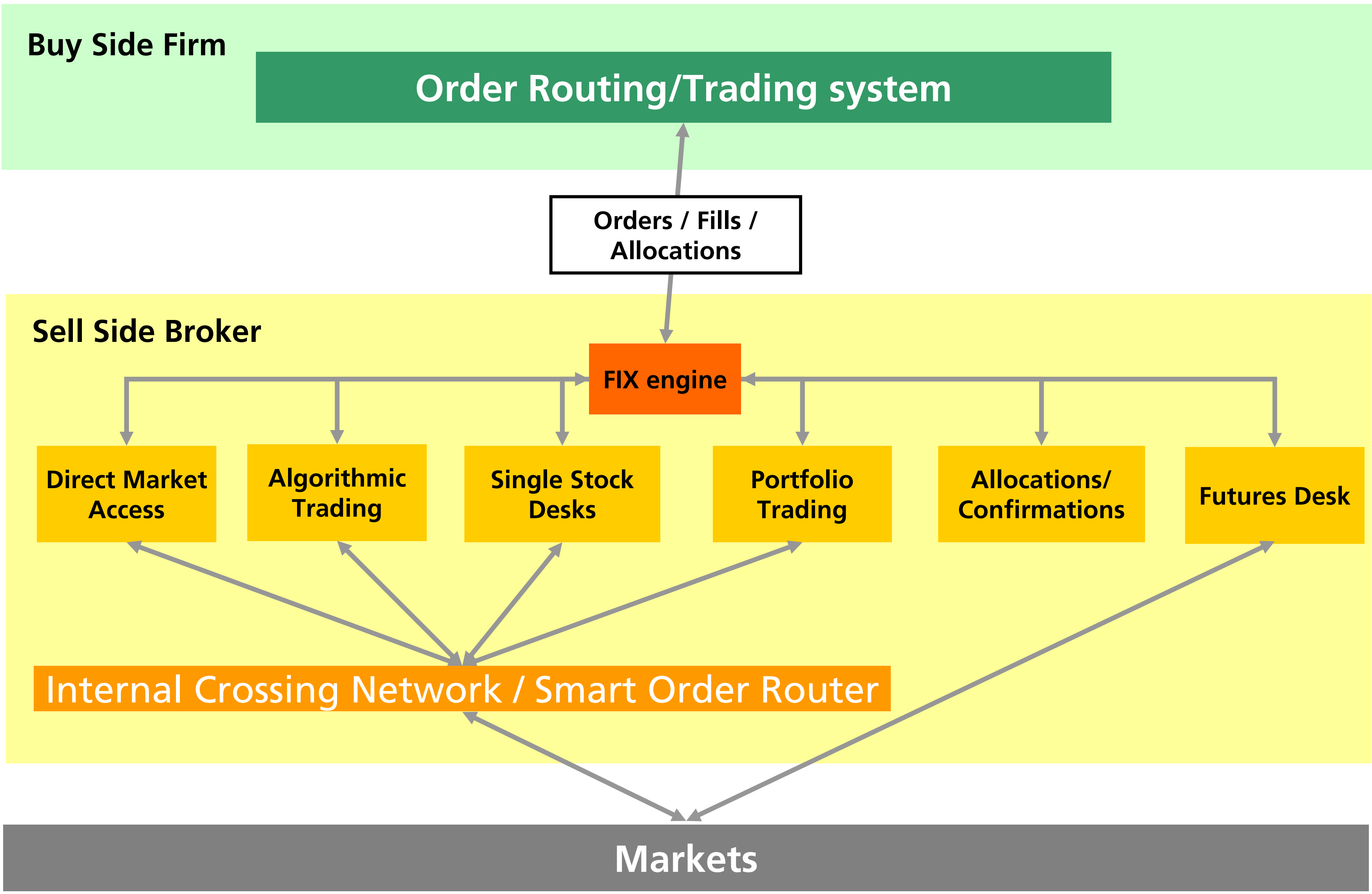
10,000+ firms use FIX globally

- 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

FIX – Electronic trading example

Connecting electronically via FIX gives access to a wide range of services.



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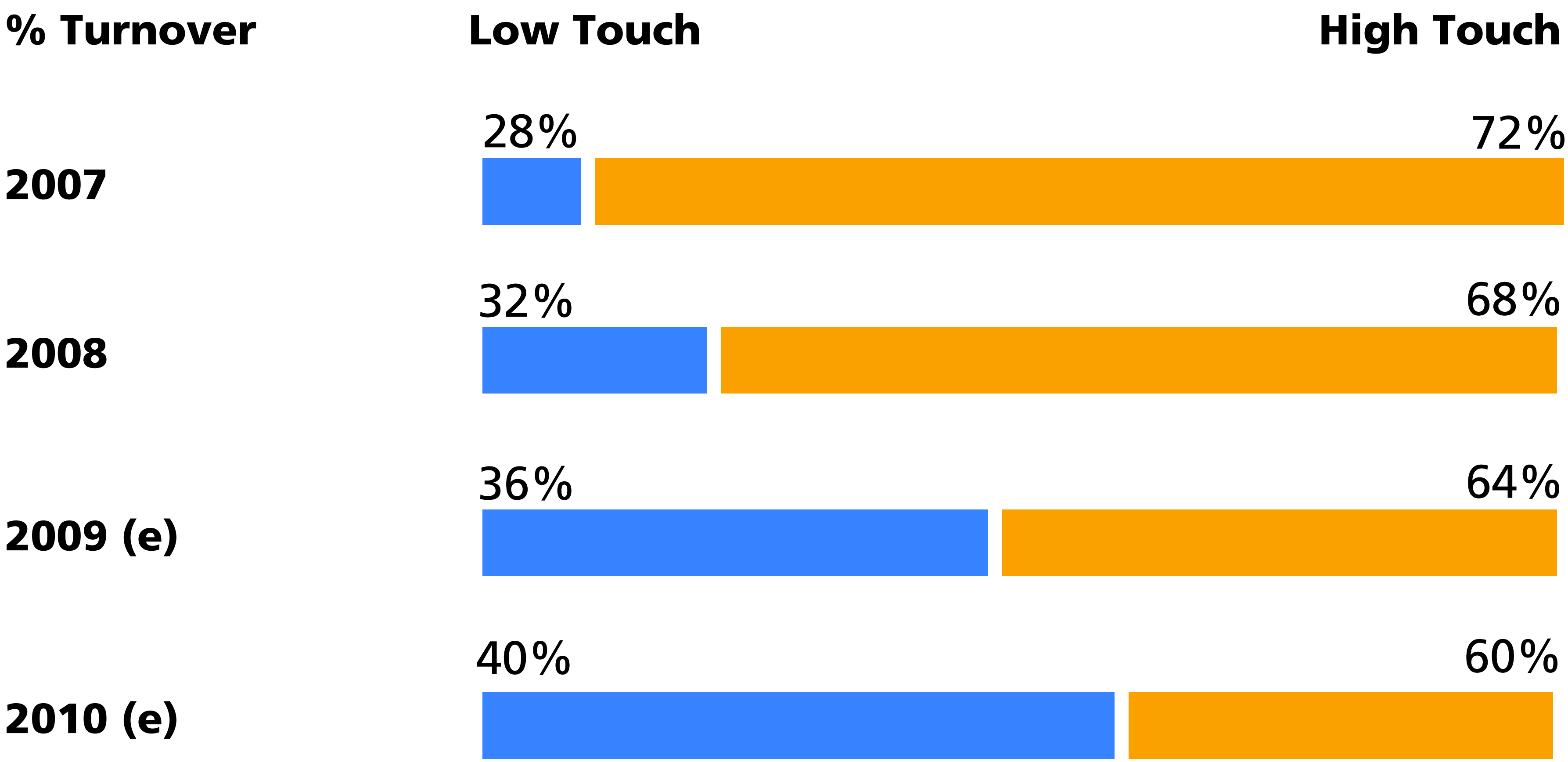
Clarifying the Terminology

- **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



Source: The TABB Group, 2008

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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

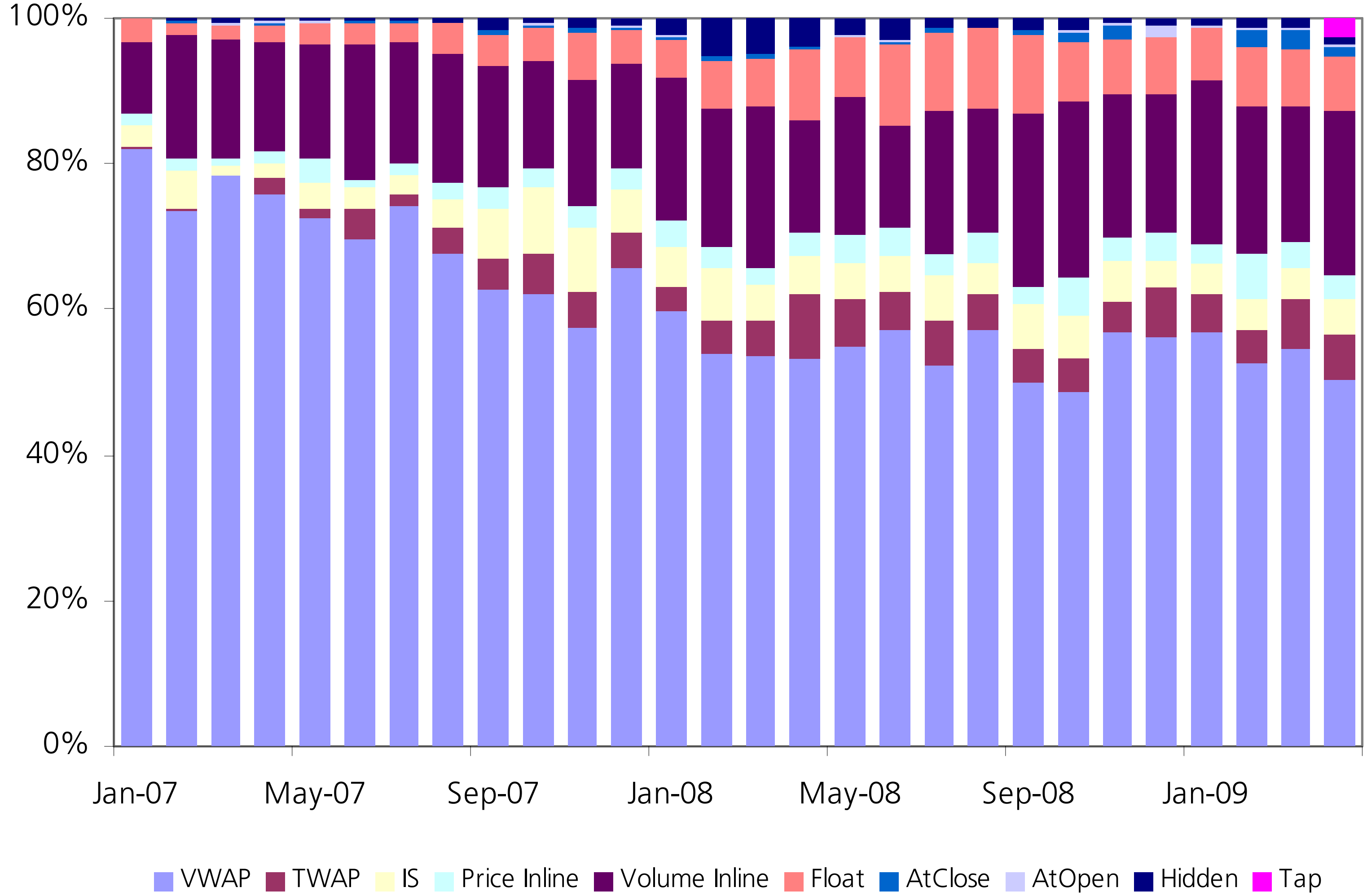
- Market driven algorithms
  - Reactive, monitors real-time activity, reacts to events
    - Volume Inline, Price Inline, Implementation Shortfall, etc

- 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



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11

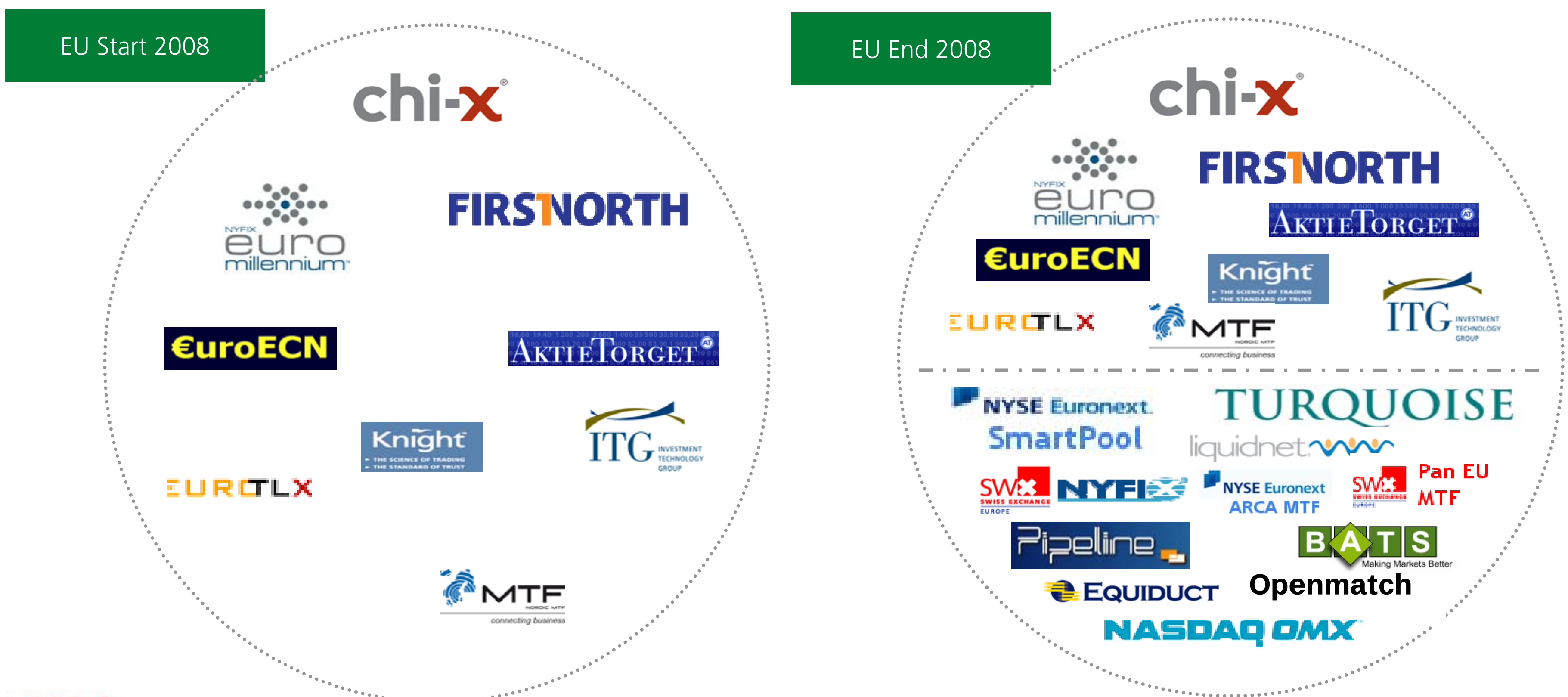
Dark Pools - Why all the buzz?

- 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)

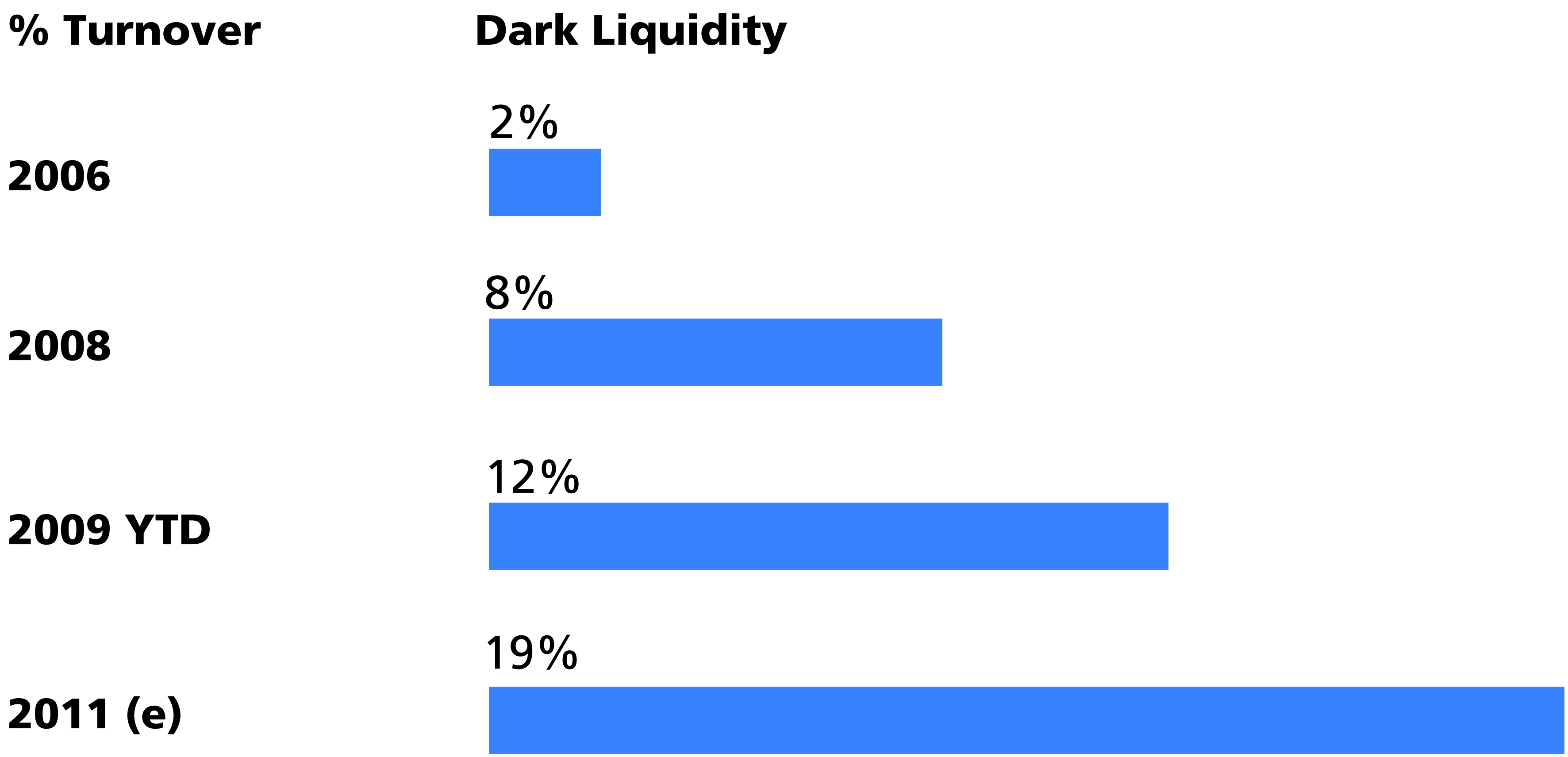
Dark Pools

- 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



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

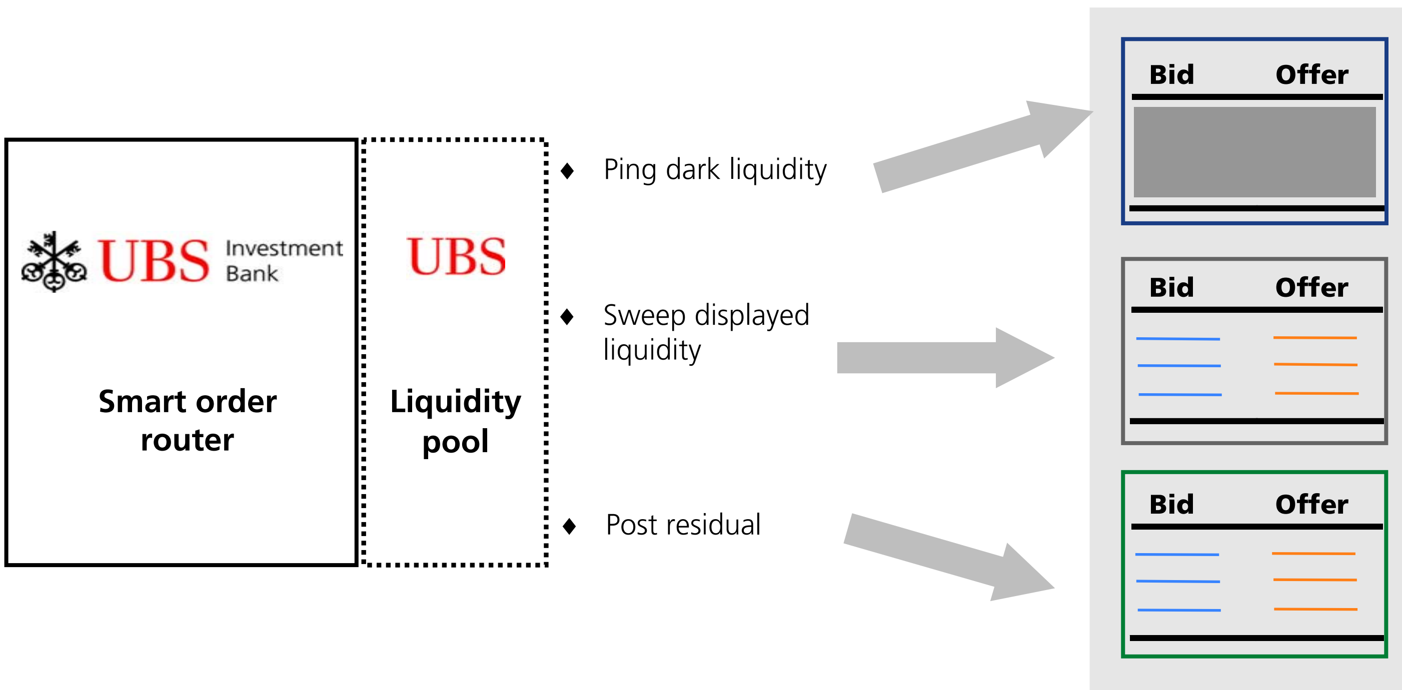
- An old concept, new name
  - This has been the role of brokers for years

- 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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