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FIXPROTOCOL
INDUSTRY-DRIVEN MESSAGING STANDARDSM

Face2Face Malaysia – Electronic Trading Overview Asia, Europe, USA

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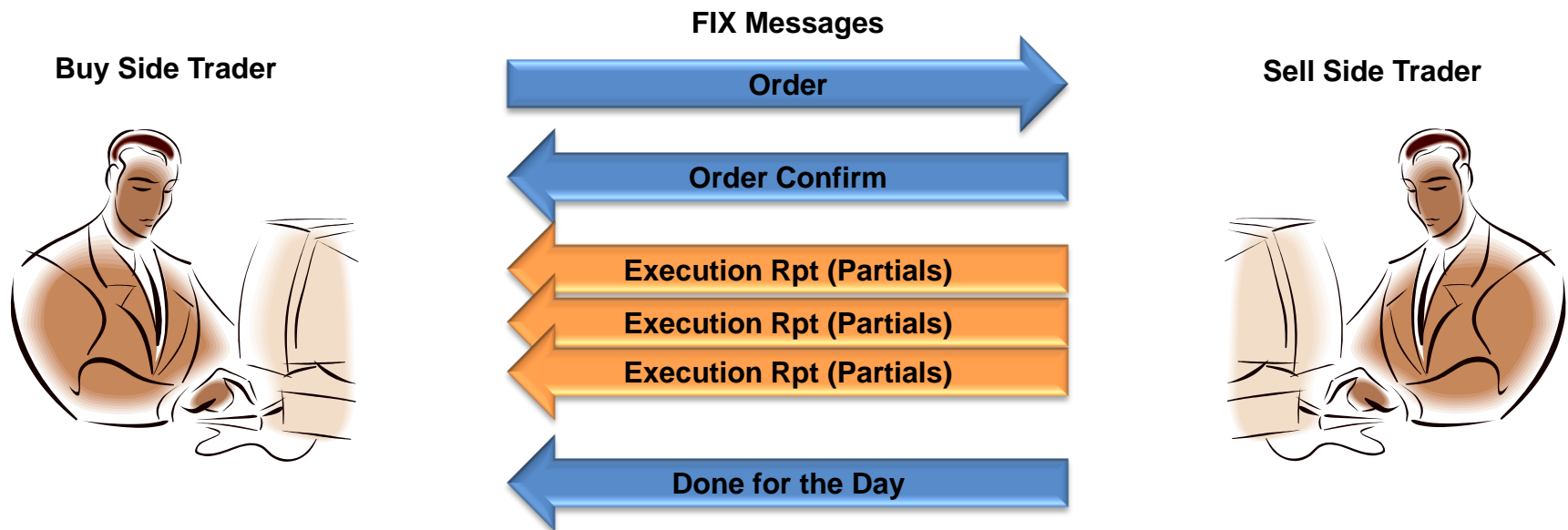
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FIX – Financial Information eXchange

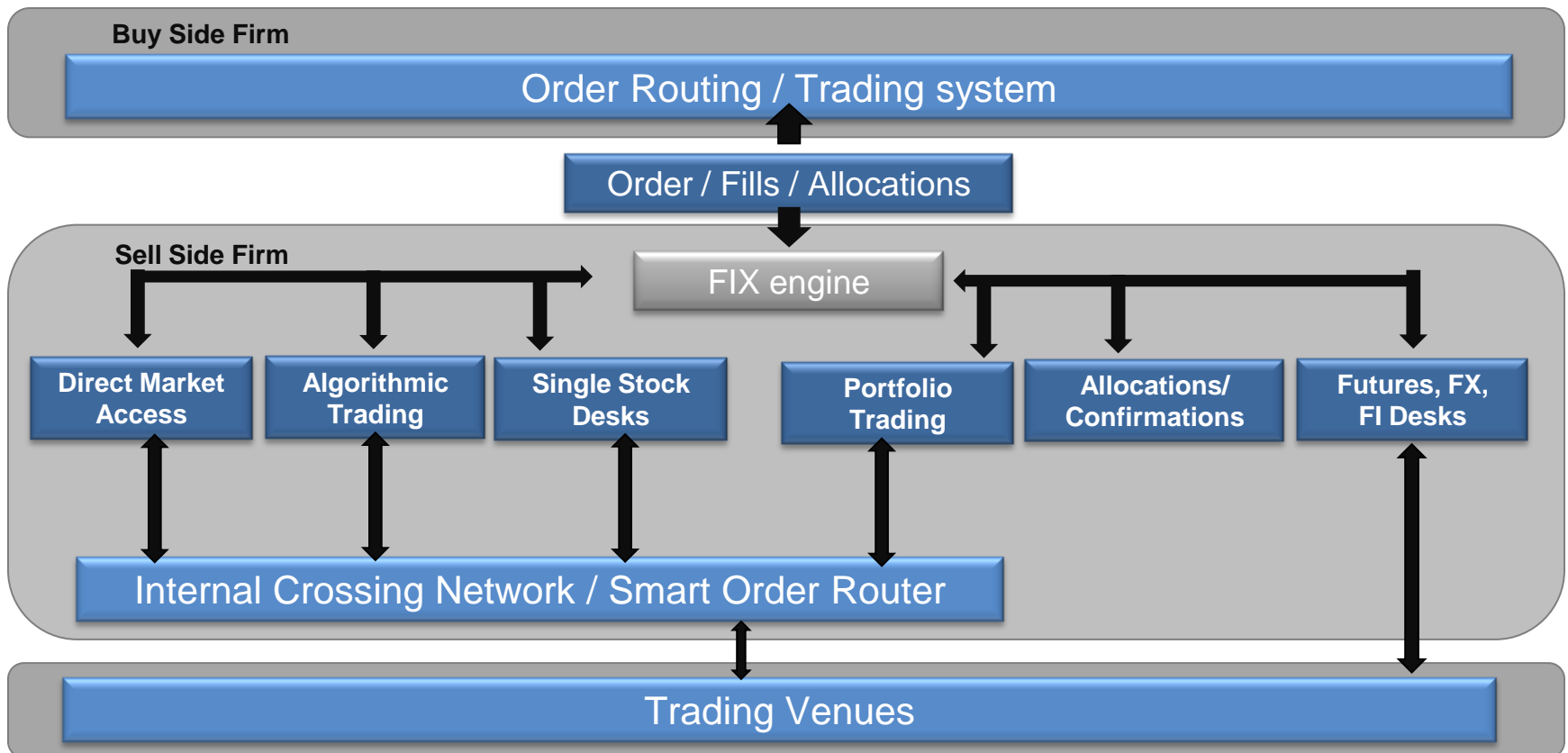
- FIX = The Financial Information eXchange Protocol
- FIX is a standard way of communicating trading information electronically between brokers, institutions and markets.
- FIX is not a piece of software, network or a service – it is just a specification of a protocol





FIX – Electronic Trading Example

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





Algorithms: Definition, Background & Benefits

Algorithms: Definition

- **Algorithmic Trading**
 - Trading strategies that use computer programs to execute trades
 - 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

Different Types of Algorithms

- **Benchmark or Scheduled-driven algorithms**
 - Structured with fixed start and end, adheres to schedule
 - VWAP, TWAP, Implementation Shortfall, etc.
- **Market-driven algorithms**
 - Reactive, monitors real-time activity in the market, reacts to events
 - Volume Inline, Price Inline, etc.
- **Liquidity Seeking algorithms**
 - Intelligently accesses multiple pools of liquidity – exchanges, alternative lit and dark pools
 - Dagger, Sniper, TAP, etc.
- **Selecting the right algorithm is key**
 - Selecting when to use algorithms and which algorithms to use

Algos are tool, they do **not** replace human judgement

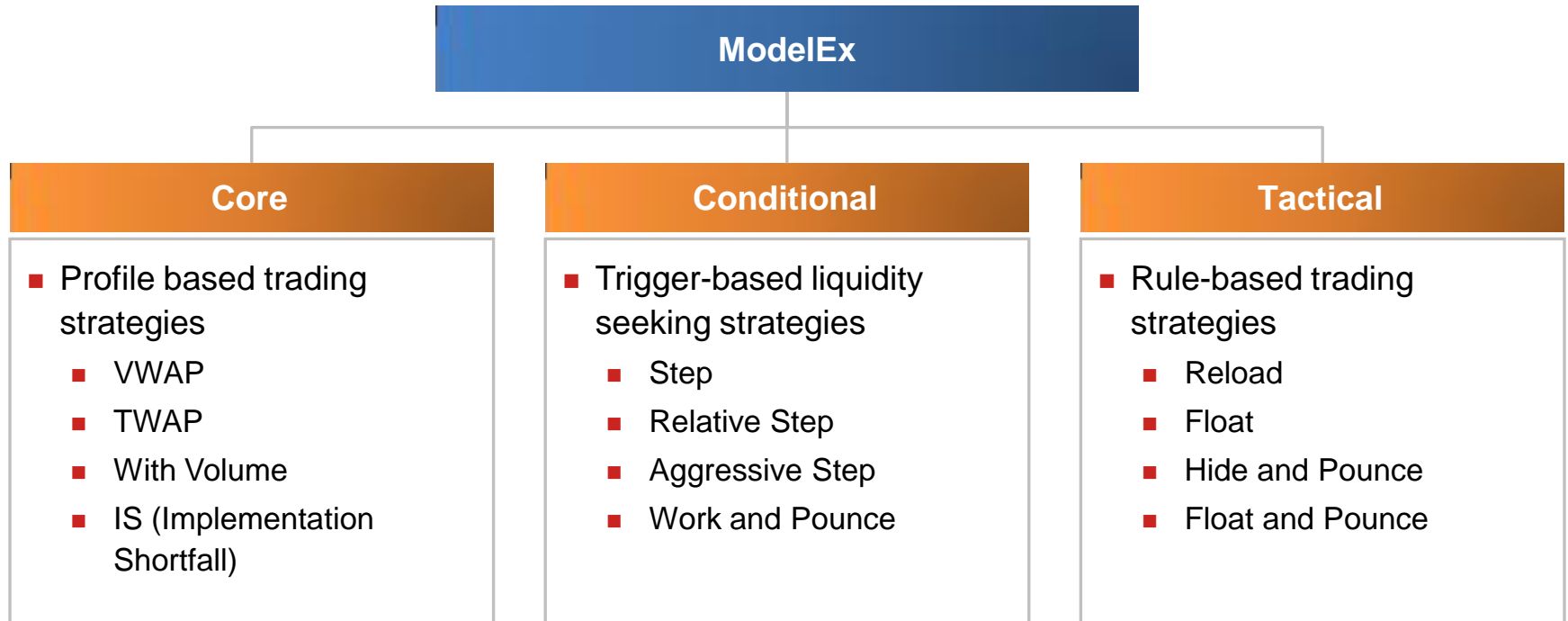


The drivers towards DMA and Algorithmic Trading

- **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 reason
- **Cost**
 - Low-touch execution leads to a lower execution charge
- **Unbundling**
 - Payment model allowing clients to decouple execution from advisory
- **Fragmentation and Liquidity**
 - Multiple venues for trading the same stock. Computer algorithms make it easier



Types of Algorithms: ModelEx



Custom strategies can be developed incorporating any aspect of the above models, based on a range of trigger conditions



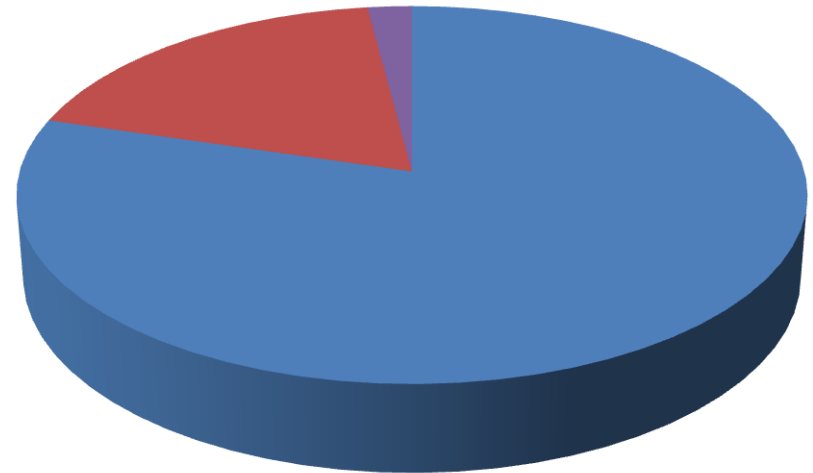
Algorithms: Advanced

- Core algorithms strategies are based on appropriate and statistically significant signals that maximize the intra-day alpha by careful use of passive and aggressive orders
- Conditional or Tactical suites of algorithms can be geared specifically to capture liquidity and to minimize market impact
- Algorithms can incorporate signals that cover reversion and momentum indicators, market behavior, liquidity and order book queuing
- Custom and hybrid strategies give clients flexibility to configure their own trading strategies
- Co-located algorithms that leverage super-fast market data feed and extremely low latency of executions
- Algorithms can be used to access to dark pools providing maximum price improvement opportunities



Usage of Electronic Trading in Asia (Greenwich)

- 78% Sales Trading
- 18% Electronic Trading
- 4% Program Trading

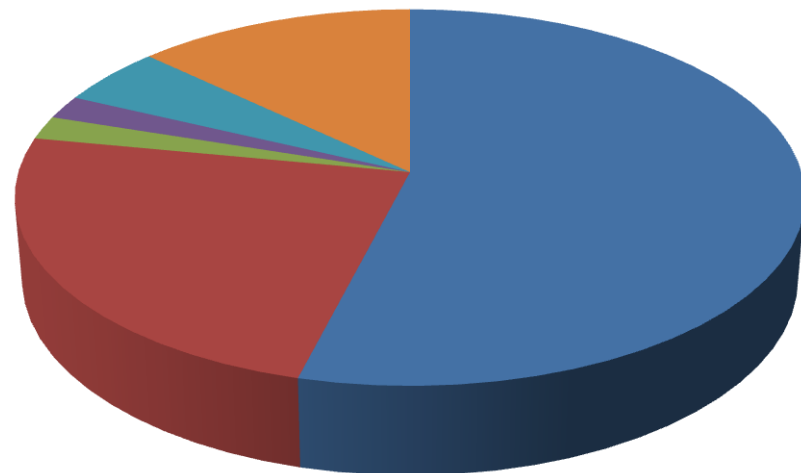


■ Sales Trading ■ Electronic Trading
■ Program Trading



Usage of Algorithms (Nomura Asia)

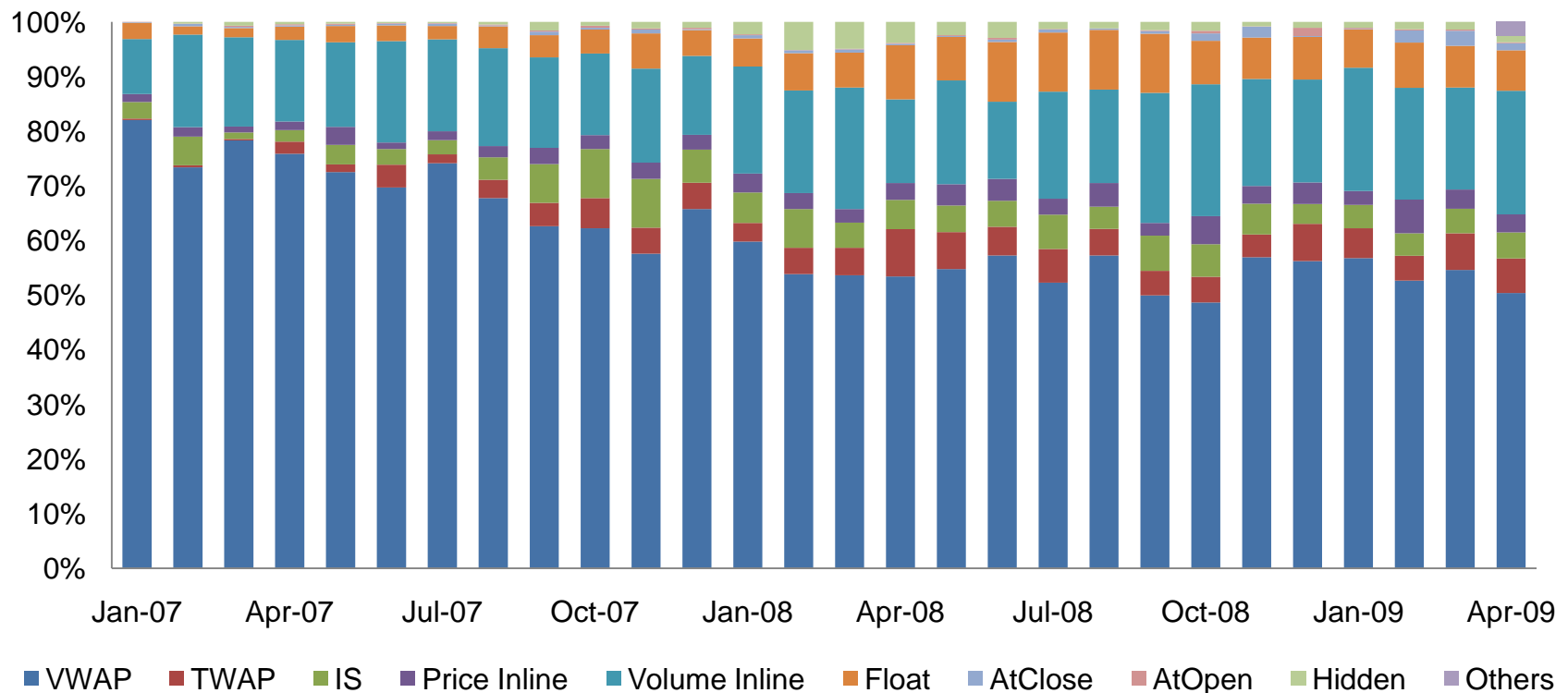
- Estimate of algorithm usage:
 - 54% VWAP
 - 24% with Volume
 - 2% Target Strike
 - 2% TWAP
 - 5% Smart DMA
 - 13% Conditional/Tactical





Asia Pacific Algorithm Usage

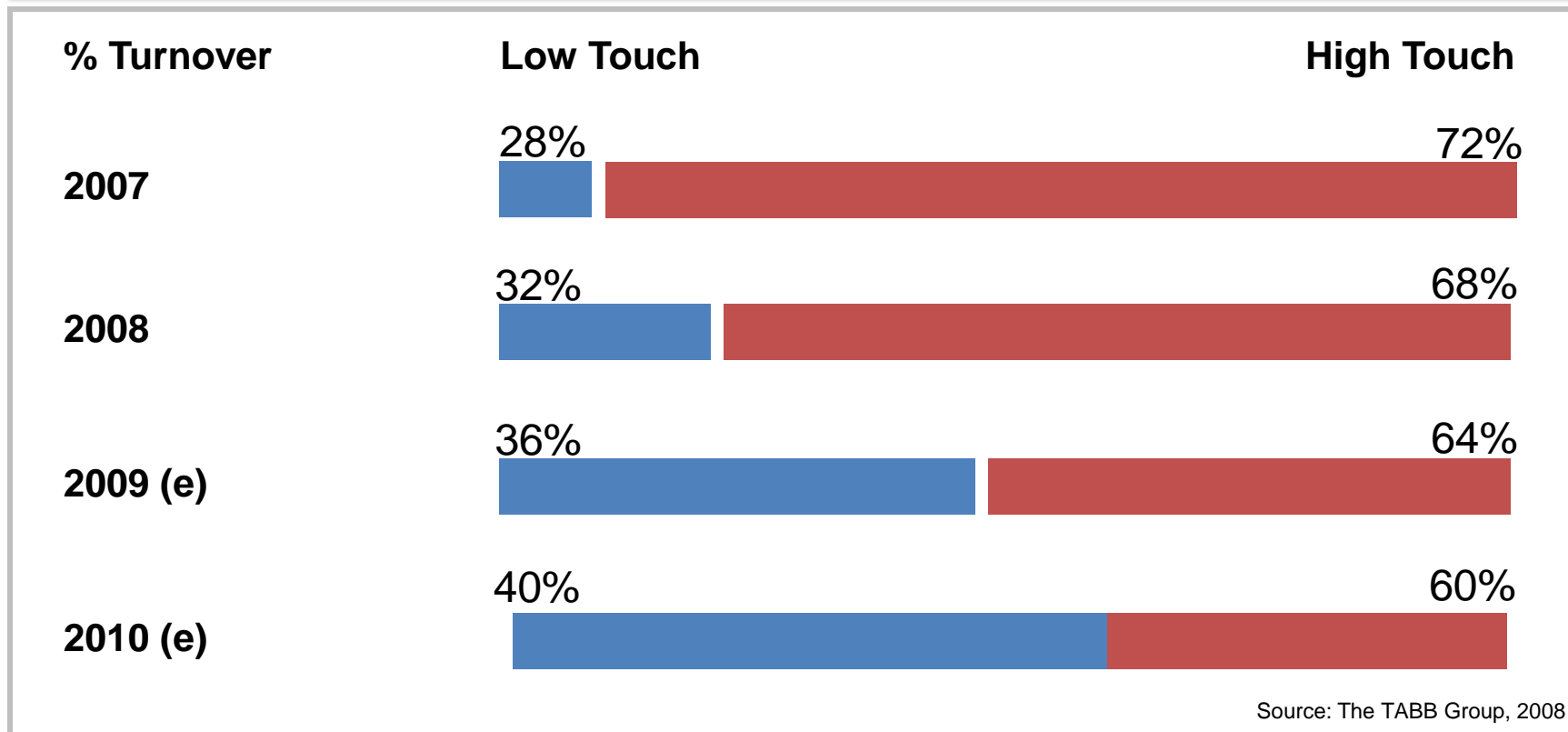
A steady move away from VWAP to more price sensitive and liquidity seeking algorithms





Growth in DMA and Algorithmic trading in Europe

Changes to European Landscape





Related Innovations

Smart DMA

- Increase order acceptance rate and execution performance (e.g., Queues orders pre-opening, during blocking period and lunch break)
- Offers clients a consistent trading experience across all destinations, including simulated order types, odd-lot handling, order splitting, where not natively supported by the exchange
- Enables advanced order types and broader FIX support, including Reserve, Discretion, Pegged, and Stop orders

NX Dark Pool

- New anti gaming logic enhancements
- Improved flexibility for client usage through release of minimum initial fill, subsequent fill and leave size restrictions
- Expansion with pre open/post close and opening / closing auction crossing

TradeSpex | Alerts

- New alerts: auction price indicator, corporate actions, price move vs. sector and stock etc.
- Improved alerts: market close explicit time parameter, enhanced ack message for target close orders showing trade schedule etc.
- Alerts support and recognise re-opened orders vs. new orders

Smart Order Routing

- Improved passive order placement logic – ability to place and amend passive orders across primary, visible and dark ATSS
- Dynamic order rebalancing intraday – ability to alter venue preferences intraday based on execution patterns



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