Why use FX Execution Algorithms?

- Powerful solutions providing **Automation**, **Transparency**, **Confidentiality**, **Adaptability**
- Satisfying a variety of **client’s execution objectives** without a need to invest into infrastructure:
  - Market Impact control
  - Spread capture
  - Performance benchmarks
  - Liquidity sourcing
  - Opportunity cost /Volatility risk as a factor

What are FX Execution Algorithms risks?

**Clients own the FX Execution risk**

- **Full order execution by the order expiry time is not guaranteed.** Several factors can impact full completion:
  - Strategy objective (liquidity sourcing, TWAP, market impact mitigation)
  - Market liquidity vs impact risk/reward
  - Limit price
- **The execution price is also not guaranteed**:
  - The aggregate rate is dependant on market moves during the execution window
  - Circuit Breakers are implemented due regulatory requirements, in order to mitigate risk of market disintegration.
Main User Defined Inputs and Characteristics

- **Inputs available via UI / Bespoke configuration:**
  - **Instrument:** current offerings typically include G10, a wide variety of EM currencies and their crosses, spot and forwards
  - **Size / Sid:** parent order is credit checked and verified against pre-set agreed maximum per client per algo per currency pair
  - **Strategy:** aggressive, passive opportunistic, schedulers or hybrids
  - **Liquidity Pool:** typically high-level choice or market liquidity and/or internalisation
  - **Price controls:** limit price, trigger price, etc.
  - **Liquidity Pool:** bespoke set of venues, selected liquidity providers within a venue
  - **Internalisation type:** mid tracking or limit order book
  - **Other controls:** any internal controls can usually can be configured per client

- **Benchmarks (internally calculated and third-party)**
  - Risk Transfer Price, Arrival Mid Price
  - TWAP (mid and taker), VWAP *(not as important as in equities due to data uncertainty)*
  - Last market mid price, reversion profile
  - MTM profile
FX Execution Algorithms optimisation/parameterization

- **Simulation environment**
  - A framework scaled across many CPU’s for hosting and running in-house applications in accelerated time and in parallel.
  - Version control, production-like, deterministic, market or simulated data
  - Automation of regression testing, functional testing, stress testing; reproduction and diagnostics of production issues
  - Model calibration and performance evaluation against benchmarks, learning framework
  - Scenario analysis and pre-trade analytics for algorithmic execution

*Large scale simulation is the primary method to optimise algo behaviour. Such general behaviour is then customised to match their alpha horizon based on the feedbacks and post-trade analytics.*
FX Liquidity Landscape: What You See Is Not What You Get

Given the increased fragmentation within the FX markets, liquidity can be uncertain, due to:

- **De-centralization**: multiple liquidity sources around the globe
  - Technological requirements for liquidity providers; co-location in several centres
  - Natural geographical latency

- **Firm and non-firm liquidity**:
  - Firm liquidity venues serve as market reference
  - Non-firm venues allow for last-look practice

- **Throttling**:
  - Certain data feeds are throttled
  - Credit screened feeds are slow

- **Specifics of Liquidity Sources**
  - On / Off Sef: Liquidity type may change during the day
  - Mid books, post trade compensation practice
  - Indirect Liquidity: CME futures

- **Volume uncertainty**:
  - Connecting to all sources unfeasible
  - Historical and real-time volume information is incomplete

- **Internalisation**
  - Algo providers leverage from their FX franchise to minimise market footprint

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### Improved quality of execution

**Liquidity Pool Optimisation**
- Selection of venues, liquidity providers

**Optimal allocation**
- Taking into account fill uncertainty and price impact under market conditions

**Real-time feedback**

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**HSBC Liquidity**
- EBS
- Reuters
- HOTSPOT
- LMAX
- CURRENEX
- GAIN GTX
- FastMatch
- PARFX
- CME
- GTX
- Lava
- FSS

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