

# ALGO FX SPOT

# & NDF EXECUTION

## Fixed income & currencies

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FX ALGO webpage & video



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# ALGO FX EXECUTION

# ALGORITHMIC FX EXECUTION



[FX ALGO VIDEO](#)



[FX ALGO WEBSITE](#)

- We have developed a unique and comprehensive suite of Algorithmic Execution strategies aligned to the risk appetite of our clients.
- TWAP+, NIGHT JAR and FALCON algos are designed to provide effective access to liquidity as well as optimise execution performance for **FX SPOT, FORWARD and NDF**.
- Algorithms are implemented for a wide range of clients, from Financial Institutions to Corporates, and can offer a wide range of execution styles based on the market conditions and client requirements.
- Societe Generale has developed its own FX algorithmic execution tool, allowing you to trade directly in the market in a controlled and anonymous way.

1

## ANONYMITY

- Your algorithmic orders flow through a segregated process

2

## REDUCED FOOTPRINT

- We apply logical decision-making to reduce signalling in the market and we utilise a variety of liquidity sources to protect the confidentiality of your order
- You can select a strategy according to your time constraint and footprint sensitivity

3

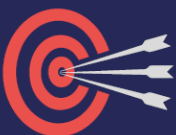
## ESTABLISHED ALGORITHMS

- We use the same algorithms in the execution and hedging of our own market making books, and are continually refining them

4

## TRANSPARENCY

- In the post trade process, you will benefit from a detailed Transaction Performance Analysis for total transparency



## NDF ALGOS NOW AVAILABLE ON BLOOMBERG

- ✓ Fee based business
- ✓ BLOOMBERG, FIX-API, SGMarkets, BidFX, Flextrade, FXConnect, FXALL, 360T, FXSPOTSTREAM
- ✓ Dedicated advisory on Algo Execution
- ✓ Focus on high execution performance on all types of currency

# 2



## FX ALGOS

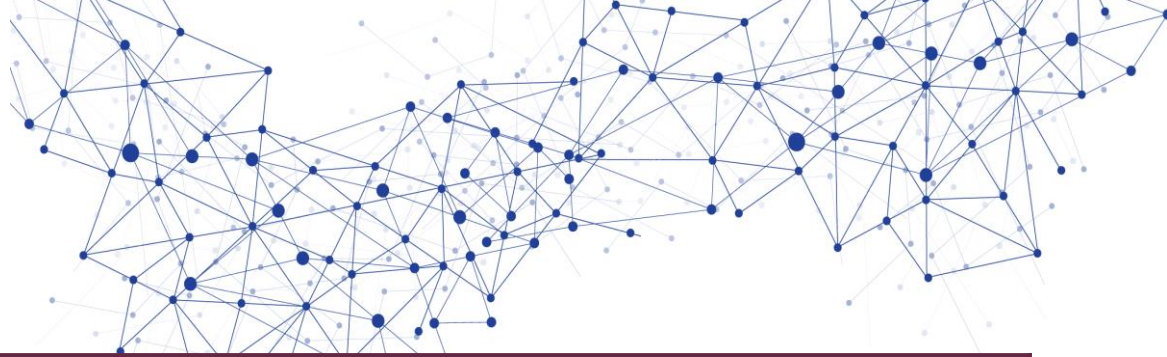
# FX ALGO EXECUTION

NAME	STRATEGY	DESCRIPTION	KEY PARAMETERS
<b>TWAP+</b>	Time-based	Allows you to trade along a predefined scheduled profile to get an average price over a time interval splitting orders to minimize the transaction cost	<b>Spread Capture:</b> Leave passive orders between two "slices" to potentially benefit from market moves and improve execution price <b>Clipping mode:</b> Automatic / Manual / Incremental / Decremental <b>Randomize:</b> Advanced camouflage mode increasing stealthiness by randomizing the slice intervals and amounts <b>Limit Price</b>
<b>FALCON</b>	Aggressive	Pro-active strategy, that remains undetected until a certain spot limit is reached. The Falcon targets several liquidity pools, seeking to execute your order as quickly as possible without leaving any visible trace	<b>Speed:</b> Slow, Normal, Fast - impacting the number of aggregated depths user for a single sweeping slice (3, 5, 8) <b>Limit Price</b>
<b>NIGHTJAR</b>	Passive	A stealthy strategy, used when discretion is more essential than speed. The Nightjar inputs passive orders into the market (spread into different liquidity pools), aims for the highest level of discretion and takes liquidity when opportunities arise	<b>Alpha Seeker:</b> Adjust in real time the execution strategy of the algo according to our market price evolution prediction <b>Speed:</b> Slow, Normal, Fast - impacting the participation level targeted by the Nightjar (5%, 10% or 40%) <b>Limit Price</b>

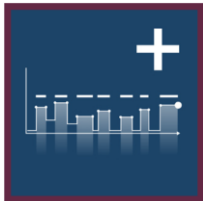
<b>Platforms</b>	BidFX, Bloomberg, Flextrade, FXConnect, FIX API, FXSpotstream, FXALL, Portware, SGMarkets, 360T
<b>Liquidity Pools</b>	CBOE, Currenex, Curex, EBS Markets, EBS Direct, Edgewater Markets, Euronext FX, FXSpotStream, LMAX, PARFX, Refinitiv Matching, 24X, 360T GTX, Siege FX
<b>NDF Offering</b>	USD TWD, USD KRW, USD PHP, USD INR, USD IDR (1 Month Maturity)
<b>Live TCA</b>	Track in Real-time the performance and behaviour of your SPOT or NDF FX Algorithmic execution
<b>3<sup>rd</sup> Party TCA</b>	SocGen partners with <b>Bestx and Tradefedr</b> to provide post trade reporting and detailed insight into the order's performance.
<b>Eagle Eye</b>	Our Pre-Trade Analytical tools to optimize the cost of your SPOT FX Algorithmic execution using SG expertise and data

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# TWAP+



## OBJECTIVES



- **TWAP+** is an algorithm that allows you to trade along a predefined scheduled profile to get an average price over a time interval
- The functionality introduces a **camouflage mode** which allows you to randomly vary intervals and help avoid detection in the market

## PARAMETERS

- **Currency Pair**
- **Way of the order:** Sell or Buy, Currency 1 or Currency 2
- **Nominal** of the order in Currency 1 or Currency 2
- **Execution Period:** Start date and time / End date and time. All orders may be active until the roll of value date: NZD pairs: up to 7AM, Wellington time (8PM when in BST). Up to 5PM NY time for the other currency pairs (10PM London time in general).
- **Auto-roll forward**
- **Clipping mode type:** Automatic / Manual / Incremental / Decremental
- **Clip Size:** In case of manual clipping mode
- **Limit Price:** Mandatory in order to protect the end-user against extreme market moves
- **Spread Capture:** Option to leave passive orders between two “slices” to potentially benefit from market moves and improve execution price

## ESSENTIALS

- **Available for Asian NDF pairs with 1 month maturity** (USD/TWD, USD/KRW, USD/PHP, USD/INR, USD/IDR)
- **Description:** A duration fixed strategy that splits its orders to minimize market impact and transaction costs
- **Execution style:** Large amounts, Medium to long duration
- **Footprint:** Medium
- **Client risk:** Being detected in the market
- **Use Case:** All currency pairs. Possibility to add crosses
- **Good to know:** Stealth may be increased by randomizing the slice intervals and amounts. Client can access Societe Generale Internal liquidity pool
- **Transaction Cost Analysis Report**
- **Execution fee**

### During the execution period, client can:

- Switch Algorithm strategy from one to the other at its discretion
- Change the limit price
- Change the nominal amount
- Change the end time
- Stop the algo execution

# NIGHTJAR

## OBJECTIVES



- **The Nightjar** is a stealthy strategy, used when discretion is more essential than speed
- The Nightjar algorithm inputs passive orders into the market (spread into different liquidity pools\*) and aims for the highest level of discretion. It takes liquidity when opportunities arise

\*when both SG and Market liquidity is selected

## PARAMETERS

- **Currency Pair**
- **Way of the order:** Sell or Buy, Currency 1 or Currency 2
- **Nominal** of the order in Currency 1 or Currency 2
- **Execution Period:** Start date, time and duration. All orders may be active until the roll of value date: NZD pairs: up to 7AM, Wellington time (8PM when in BST). Up to 5PM NY time for the other currency pairs (10PM London time in general)
- **Auto-roll forward**
- **Speed:** SLOW, NORMAL or FAST
- **Limit Price:** Mandatory in order to protect the end-user against extreme market moves

## ESSENTIALS

- **Available for Asian NDF pairs with 1 month maturity** (USD/TWD, USD/KRW, USD/PHP, USD/INR, USD/IDR)
- **Description:** A passive execution that aims at highest degree of stealth to remain undetected
- **Execution style:** Medium / large amounts, Medium to long duration
- **Footprint:** Low
- **Client risk:** Partial execution, final price worse than initial spot risk transfer price for full size
- **Use Case:** All major currency pairs. Possibility to add crosses
- **Good to know:** May not execute the full requested amount for some less liquid currency pairs. Client can access Societe Generale Internal liquidity pool
- **Transaction Cost Analysis Report**
- **Execution fee**

## NightJar & The Alpha Seeker

Over the last 10 years, we have captured extensive analytics across different markets, processing almost one million gigabytes of data. It has enabled us to provide cutting edge algos.

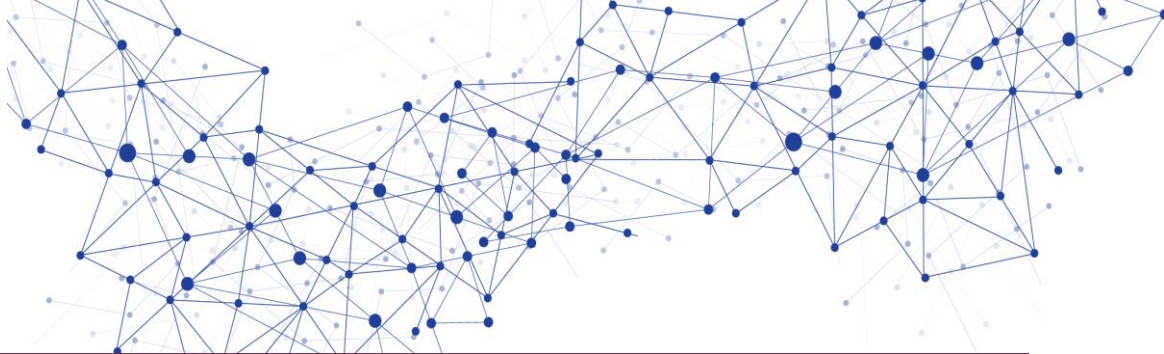
A great example is the Alpha Seeker of the NIGHTJAR offer, allowing to adjust in real time the execution strategy of the algo according to our prediction of evolution of the market price.

This technology is based on the implementation of latest generation artificial intelligence algorithms, calibrated over 10 years of market data and re-adjusted in real time.

## During the execution period, client can:

- Switch Algorithm strategy from one to the other at its discretion
- Change the limit price
- Change the nominal amount
- Change the end time
- Stop the algo execution

# FALCON



## OBJECTIVES



- **The Falcon** is a pro-active strategy, used when speed is more essential than stealth
- As soon as a certain spot limit is reached, the Falcon algorithm targets several liquidity pools, seeking to execute your order as quickly as possible without leaving any visible trace

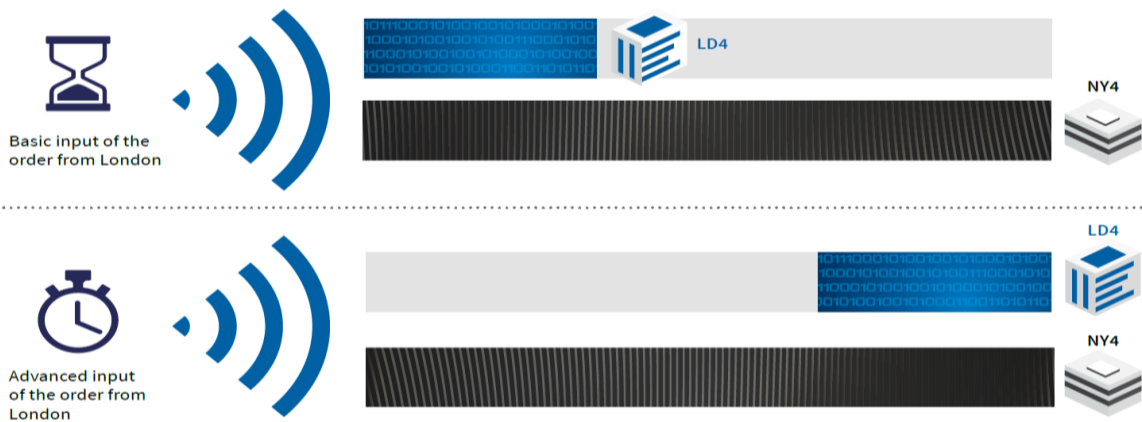
## PARAMETERS

- **Currency Pair**
- **Way of the order:** Sell or Buy, Currency 1 or Currency 2
- **Nominal** of the order in Currency 1 or Currency 2
- **Execution Period:** Start date, time and duration. All orders may be active until the roll of value date: NZD pairs: up to 7AM, Wellington time (8PM when in BST). Up to 5PM NY time for the other currency pairs (10PM London time in general)
- **Auto-roll forward**
- **Speed:** SLOW, NORMAL or FAST
- **Limit Price:** Mandatory in order to protect the end-user against extreme market moves

## ESSENTIALS

- **Available for Asian NDF pairs with 1 month maturity** (USD/TWD, USD/KRW, USD/PHP, USD/INR, USD/IDR)
- **Description:** A limit order that remains undetected until the market level matches its interest
- **Execution style:** Moderate amounts, Short duration, large amounts in liquid pars
- **Footprint:** High
- **Client risk:** Zero or partial execution\
- **Use Case:** Major currency pairs. Possibility to add crosses
- **Good to know:** Client **cannot access** Societe Generale Internal liquidity pool
- **Transaction Cost Analysis Report**
- **Execution fee**

## Falcon & the Thor Hammer Story



## During the execution period, client can:

- Switch Algorithm strategy from one to the other at its discretion
- Change the limit price
- Change the nominal amount
- Change the end time
- Stop the algo execution

# 3

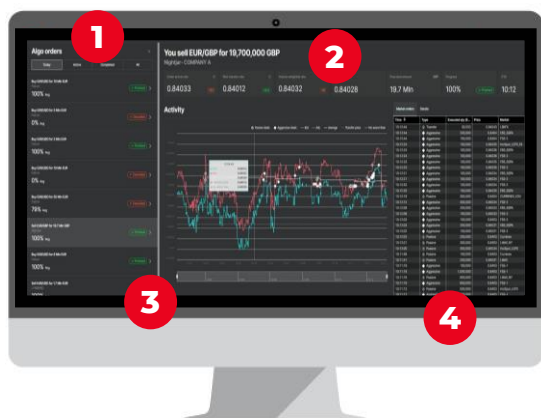
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## SERVICES LINKED TO FX ALGO EXECUTION

# CORE SERVICES LINKED TO FX ALGO EXECUTION

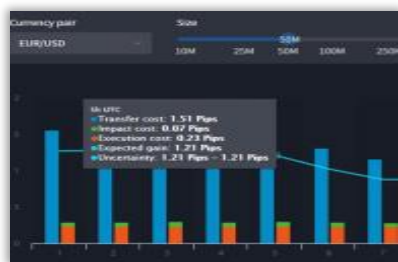
## LIVE TCA

- ✓ Track in real-time the performance and behaviour of your Spot FX Algorithmic Execution.
- ✓ Follow the orders placed by your Algo across different liquidity pools.



- 1 Access your active and/or completed Algo strategies
- 2 Track the performance of your Algo
- 3 Live monitoring of fills and market moves
- 4 View your ongoing market orders status

## FX EAGLE EYE



### PRE-TRADE ANALYTICS

Based on internal analysis of our liquidity pools historical data and our modelling of the FX market volumes, SGMARKETS FX Eagle eye service helps the Algo Execution Team to better advise its clients.

## BESTX



### POST TRADE: TRANSACTION COST ANALYSIS (TCA)

A very detailed post trade reporting to assess execution performance. As an option, the clients may receive an independent report from BestX, the leading third-party TCA provider for FX.

To avoid any information leakage regarding your FX Algo execution, all the orders are posted in anonymous order books. In addition, at our level, FX Algo order execution is hidden from principal sales & trading. Visibility is granted strictly to the algo exec trading team and e-sales. To manage a potential incident, principal spot electronic trading may only view the full details of an order after complying with a dedicated fully documented "break the glass procedure" (reported to their management and the compliance department).

# 4



## ADDITIONAL INFORMATION

# ALGORITHMIC FX EXECUTION ADDITIONAL INFORMATION

## NIGHTJAR INDICATIVE SPEED OF EXECUTION

PRODUCT	NORMAL SPEED RANGE	UNITS
EUR/USD	450-1000	EUR mm/hour
USD/JPY	160-500	USD mm/hour
GBP/USD	160-325	GBP mm/hour
AUD/USD	150-350	AUD mm/hour
USD/CAD	90-375	USD mm/hour
USD/CNH	60-250	USD mm/hour
USD/MXN	20-125	USD mm/hour

Speed ranges shown are for London day (8AM to 4Pm) and are subject to change.

Clients have a choice of speed at execution, whereby:

**SLOW Speed** is 2x slower than normal speed at execution.

**FAST Speed** is 4x faster than normal speed at execution.

## LIQUIDITY POOLS

360T GTX, CBOE FX, Curex, Currenex, EBS Direct, EBS Market, Edgewater, Euronext FX, FX Spot Stream, FXAll OrderBook Integral, LMAX, PARFX, Refinitiv Matching

## FUNCTIONALITIES

- Switch Algorithm strategy from one to the other at client's discretion (Bloomberg)
- Automatic Roll Forward (Bloomberg & FXALL)
- Pause and Resume (Bloomberg & FXALL) - Socgen is the first bank providing it on Bloomberg
- Fill Now (Bloomberg & FXALL)

## ORDER GENERATION

All orders may be active until the roll of value date, which is:

- NZD pairs up to 7 AM, Wellington time (8 PM London when in BST)
- Up to 5 PM NY time for the other currency pairs (10 PM London time in general)

## CONFIDENTIALITY

At on-boarding, clients can request the stage at which principal sales covering their account can see their algorithmic orders and executions (or not at all).

## PLATFORMS



## CURRENCY PAIRS

- G10: AUD/CAD, AUD/CHF, AUD/JPY, AUD/NZD, AUD/USD, CAD/CHF, CAD/JPY, CHF/JPY, EUR/AUD, EUR/CAD, EUR/CHF, EUR/DKK, EUR/GBP, EUR/JPY, EUR/NOK, EUR/NZD, EUR/SEK, EUR/USD, GBP/AUD, GBP/CAD, GBP/CHF, GBP/JPY, GBP/NOK, GBP/NZD, GBP/SEK, GBP/USD, NOK/SEK, NZD/CAD, NZD/CHF, NZD/JPY, NZD/USD, USD/CAD, USD/CHF, USD/DKK, USD/JPY, USD/NOK, USD/SEK
- EM: CNH/SEK, EUR/CNH, EUR/CZK, EUR/HKD, EUR/HUF, EUR/MXN, EUR/PLN, EUR/RON, EUR/SGD, EUR/TRY, EUR/ZAR, USD/CNH, USD/CZK, USD/HKD, USD/HUF, USD/ILS, USD/MXN, USD/PLN, USD/SGD, USD/THB, USD/TRY, USD/ZAR
- NDF: USD/TWD, USD/KRW, USD/PHP, USD/INR, USD/IDR

# SOCIETE GENERALE PROPRIETARY TRANSACTION COST ANALYSIS EXAMPLE

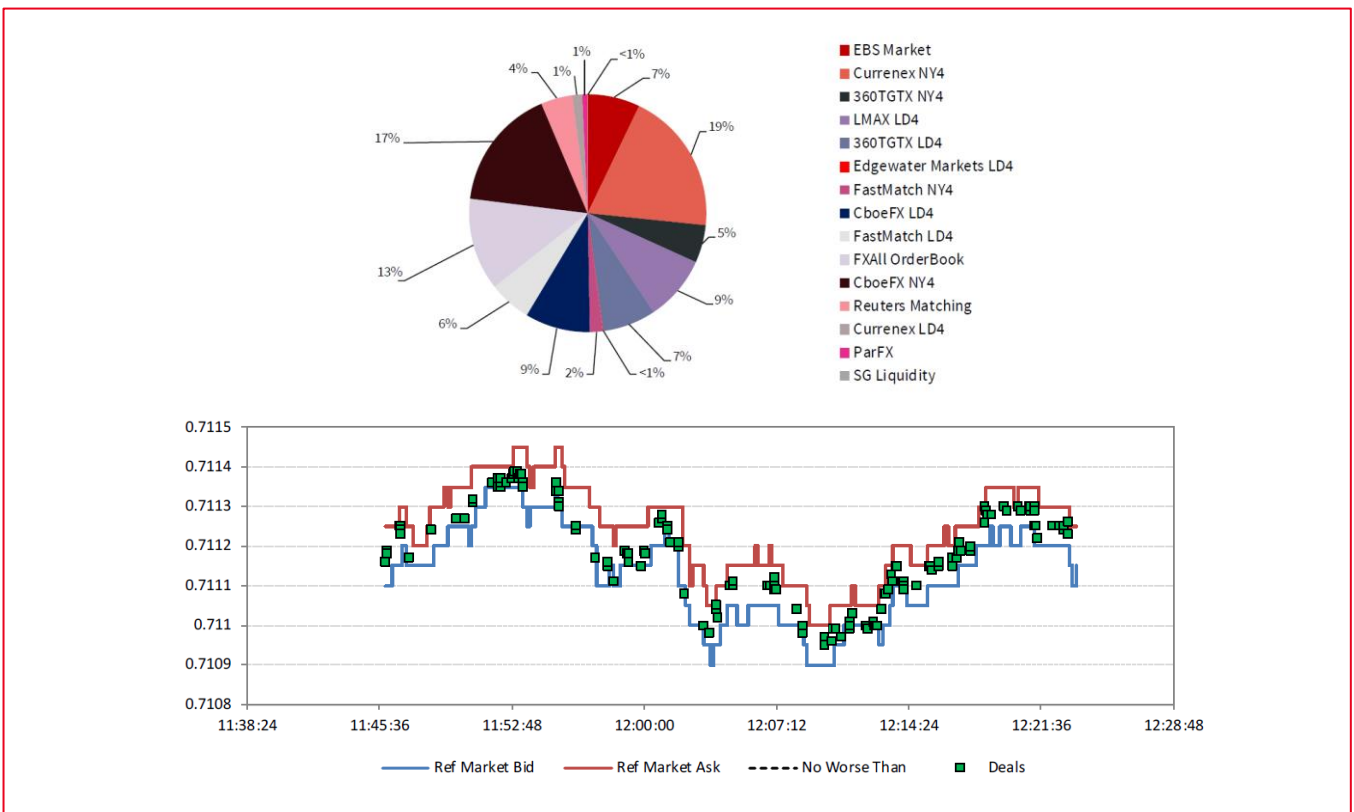
## PERFORMANCE ANALYSIS

- The Performance Analysis tool helps you to assess the effectiveness of different strategies.
- Full details on the strategy outcome and the performance of the algorithm are provided.
- Distribution pattern over execution venues is revealed and the individual trade execution details listed by time and venue is disclosed.

Order Summary	
Reference	###_###_###_####_1234567_89012345
Algorithm	Nightjar
Direction	Buy
Ccy Pair	AUD/USD
Amount in AUD	140,000,000
Fees	## /mm
Initial Limit Price	0.725420
Start Time (UTC)	2019-04-23 11:45:52
End Time (UTC)	2019-04-23 21:00:00
Include SG prices	Yes
Speed	Normal
Alpha Seeker	No

Execution Summary	
Buy AUD	140,000,000
Sell USD	99,569,260
Gross rate	0.7111870
Net rate	0.7112090
Fees in AUD	4,331
Passive ratio	73%
Duration	00:37:05

Performance Benchmarks	Rate	Perf. (bp)	Perf. (AUD)
Risk Transfer Rate (Model)	0.711534	+4.88	+68,253
Mid Market Arrival Price	0.711175	-0.17	-2,362
Volume Weighted Mid Market Price	0.711198	+0.16	+2,188
Average Ask Market Rate (TWAP)	0.711240	+0.75	+10,473



# INDEPENDENT 3RD PARTY TRANSACTION COST ANALYSIS PROVIDED BY BESTX

- Societe Generale has partnered with BestX, leaders in the field of 3rd party TCA provision, to provide our clients with the option to receive (for a fee) an independent TCA report on their Algo trades executed through SG.
- BestX's truly independent analysis enables clients to implement a flexible, rigorous, justifiable and repeatable execution process in accordance with market and regulatory evolution.

BESTX



# FX ALGO SUMMARY

Algorithmic Execution Strategies aim at minimizing market impact and transaction costs through the use of high speed technology.

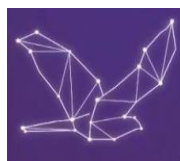
Societe Generale has developed its own FX algorithmic execution tool, allowing you to trade directly in the market in a controlled and anonymous way.

Anonymity	Reduced Footprint	Proven Algorithms	Transparency
Orders flow through a segregated process	Reduced signalling from logical decision making and a variety of liquidity sources	We apply the same algorithms internally, for our own market making books	Detailed transaction performance analysis

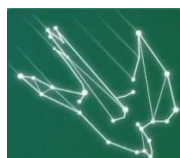
## FX ALGOS



- **TWAP+** is an algorithm that allows you to trade along a predefined scheduled profile **to get an average price over a time interval**.
- The new functionality introduces a camouflage mode which allows you to randomly vary intervals and help avoid detection in the market.



- The **Nightjar** is a stealthy strategy, used **when discretion is more essential than speed**.
- This algorithm takes liquidity when opportunities arise thanks to passive orders posted into different liquidity pools.



- The **Falcon** is a pro-active strategy, used **when speed is more essential than stealth**.
- As soon as a certain spot limit is reached, this algorithm executes the client order as quickly as possible in multiple liquidity pools.



- The **Lyrebird** an algorithm built to **replicate standard FIXING benchmarks**, allowing you to be active in the market during the fixing window

## CORE SERVICES LINKED TO FX ALGO EXECUTION

### FX EAGLE EYE

Based on internal analysis of our liquidity pools historical data and our modelling of the FX market volumes, SGMARKETS FX Eagle Eye service helps the Algo Lab Team to better advise its clients.

### TCA & BestX

A very detailed post trade reporting to assess execution performance. As an option, the clients may receive an **independent report** from **BestX**, the leading third-party TCA provider for FX.

PRE-TRADE ANALYTICS



POST TRADE: TRANSACTION COST ANALYSIS (TCA)



# USEFUL INFORMATION

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552 120 222 RCS Paris - APE : 651C - SIRET : 552 120 222 000 13

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