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Algo Due Diligence Questionnaire

GENERAL	
This general section outlines the core features of the algorithm. Providers may consolidate answers 1–5 into a table or grid if they wish to cover multiple algorithms with the same template.	
Q1	Algo Provider (also referred to as "you" or "your" below as required):
A1	SEB
Q2	Algo name(s):
A2	TWAP, Peg, Aggressive Watch, DynamicX
Q3	Liquidity type (internal, external, hybrid):
A3	Hybrid
Q4	Products covered (spot, forwards, swaps, NDF):
A4	Spot and forwards (forwards over certain venues only)
Q5	Description[1] of algo(s):
A5	TWAP is a time-sliced algo, Peg is a pegged/tracker algo, Aggressive Watch is a sweeping algo with a limit price, DynamicX is a liquidity seeker.
Q6	Please describe any parameters or controls the user may adjust:
A6	**TWAP**: Amount, direction, currency pair, limit price, time (start and end time) **Peg**: amount, direction, currency pair, Tracking style: aggressive (improving current bid or offer), neutral (same level as current market bid or offer) or passive (worse than current bid/offer), internal only (trading on SEB internal pool only), match on mid (on or off): the client can agree to trade all the way to the mid price in SEB's own internal pool, limit price, time that the order is valid for. **Aggressive watch**: amount, direction, currency pair and limit price, trigger price, time that the order is valid for. **DynamicX:** Amount, direction, currency pair, limit price, time (start and end time)
Q7	Please specify if the product is built internally or externally:
A7	The product is built internally
CONFLICTS OF INTEREST	

[1] You may find it helpful to refer to the 'algo archetypes' delineated in section 2.1 of FX execution algorithms and market functioning

Some conflicts of interest may be expected but it is important to know what they are and what steps have been taken to manage them. This way the Algo User can make an informed decision.	
Q8	If principal liquidity interacts with the Algo User's order, how does this happen and what steps are taken to ensure the fill is a fair one from the order's point of view?
A8	The algo user's order can interact with internal liquidity. In the cases where the client algo aggresses, the determining factor to choose a venue (including our internal pool) is all in pricing which includes the actual price as well as historical fill ratios, slippage, brokerage and cost of cancel. In the cases where the client algo is passive, if match on mid is included in the execution (by default for TWAP and DynamicX and by parameter choice in Peg), the client algo order will match on mid in our internal pool if there is an opposite interest. This interest is independent to any algo order.
Q9	If another part of your business needs to hedge or trade in the same direction as the Algo User's order, how are fills allocated between the two?
A9	The algo order is completely independent. Each order (client or internal) is independent and will be filled separately, there is no possibility to track if the order is internal or external while the order is live in our SOR. The order in which orders are placed in the market and filled is non-deterministic, with no specific prioritization applied by SEB.
Q10	Are there any particular commercial interests in trading venues or other relevant service providers that interact with the algorithm provided by you? If so, how are such conflicts addressed?
A10	SEB is a shareholder in the ParFX trading platform, which is also one of the venues where trades can be executed. ParFX is subject to the same classification as all other platforms as described in A8.
Q11	Please elaborate on your role as regards market risk, counterparty risk, and settlement risk.
A11	SEB will be conducting normal market-making operations alongside but independently of the client algo execution. We perform counterparty and risk limit checks on the client before accepting the algo order.
Q12	Is there anything else of which you feel the Algo User should be aware?
A12	No
ALLOCATION POLICY	
There are many different approaches to allocations. It is important to understand what happens in circumstances where multiple clients wish to trade or, indeed, when one order would be used to fill the order of another client.	
Q13	If you have more than one client order wishing to trade in the same pair and on the same side, how are fills allocated amongst these orders?
A13	Those orders are completely independent, the fills will be allocated to the algo instance that posted the order. Each order follows its own execution schedule and there is no speific logic applied to coordinate between the orders, other than matching them up internally if they post countervailing interest.
Q14	If two client orders are eligible for execution netting, how does this process work?

A14	If two orders are eligible for match on mid, they will be netted if they are on the opposite side. If SEB also has an interest, the orders would be price and time prioritised.
ROUTING POLICY	
Routing policy is an important topic. There are several components such as how execution venues are evaluated, curated, and prioritised. Also covered is the question of what fair-value mid the algo uses to make routing decisions and how information leakage is avoided when placing lit orders. Finally, internalisation is defined: some providers have a strict definition such as 'two algo orders netting' whereas others will include midbooks and trades where they have shown a skew through mid externally to incentivise another counterparty to fill them.	
Q15	How are hedging execution venues evaluated, including both observable (spread, impact) and implicit costs (information leakage)?
A15	Venues are evaluated by analysing historic fill ratios, slippage and implicit cost of cancel.
Q16	How do you prioritise between different execution venues (both external and internal sources) when routing orders? Please elaborate if you have any incentives to use an external venue more often than others in your pool, e.g due to special partnership factors (money, goodwill incentives and alike).
A16	As described in A10, SEB is one of the owners of PARFX, however, ParFX is treated and compared according to the same parameters as all other venues. SEB trades on the best available price (all-in price) across the chosen venues. That includes, on top of what is described in A15, brokerage that is paid by SEB. SEB has no incentive to use any external venue more than others and applies the same selection process described in A8 across all venues, including our internal matching venue.
Q17	If multiple clients enter orders in the same pair, will you aggregate these orders before placing orders externally or treat each client order individually and place multiple similar orders, which may compete with one another for fills?
A17	Each client order is treated individually so orders might compete with each other.
Q18	What – if any – ongoing work do you do in order to curate execution venues, where curation is possible? Approximately how often is this conducted?
A18	Our Smart Order Router considers different parameters (fill ratio and brokerage) to select the best venues at that time. On top of this, SEB goes through market impact and cost of cancel on an ad-hoc basis.
Q19	Do you have any logic to avoid orders on venues where the order book is visible to all participants (lit execution venues) causing information leakage? If so, please describe it.
A19	Market impact is one of the factors that we take into account to evaluate the venues we use, so we always take this into consideration to minimise information leakage. We limit our participation in lit venues as much as possible.
Q20	Does the mid/fair-value used by the algorithm differ from the one used by your own market making system for pricing and risk management? If yes, please specify.

A20	No
Q21	Please define your understanding of 'internalisation' and, using an example, describe how this works in practice, demonstrating if/how your Algo Clients benefit from this process. If you wish to do so you may provide an indication of how much volume is internalised on average.
A21	SEB's internal matching venue is one of the pools of liquidity that client algos can access. The liquidity is built up of client algos posting interest, and also aggregated interest from SEB relating to hedging of market-making and execution activities. So client algos match other algos with opposite-side interest, or indirectly with other SEB franchise flow through the interest posted in the internal pool by SEB's own hedging. As an indication, our EUR/SEK internalisation rate for 2020 on the TWAP longer than 15 minutes was 24%.
SEGREGATION POLICY	
Segregation policy is all about keeping order information private and reducing the risk of signalling.	
Q22	Please describe if and how the algo orders are segregated within your institution.
A22	Algo orders are not visible to any market risk takers between the hours of 8:00 AM to 16:15 Central European Time. Outside of those hours, due to reduced staff, the algo orders are supervised and therefore visible to our trading personnel.
Q23	Can sales and trading personnel who provide intraday 'market colour' view algo orders at any stage? If so, what steps have been taken to minimise the risk of information leakage?
A23	Only the sales team responsible for the client entering the algo will be able to see the algo as it goes through. This is enabled as many sales personnel still enter algo orders for their clients and the clients want that person to check on their algos. Other sales teams are not able to see the algo until it is completed. No trading personnel can see the algo order during 8:00 to 16:15 CET before the order is completed. However, those few trading personnel operating outside those hours would be able to see algo orders (purely for risk management purposes, and never for discretionary trading purposes). Live algo orders will never be part of market colour. Historical algo orders could be part of a generalised and anonymised market colour abiding to our rules: namely, that SEB Staff will never disclose a client's name, specific deal size or other terms relating to a client transaction (whether completed, forthcoming or expected) without that client's explicit permission. - Clients should be aggregated in segments and into wider geographical areas (e.g. "European real money selling SEK") so that the client name can never be guessed and we maintain the client's confidentiality. - Before providing any market colour to a client, SEB staff always considers the following questions: a) Could the communication constitute a breach of confidentiality? b) Could an external third party guess the identity of the client being referred to by the way the communication is given?

Q24	Can discretionary traders who may enter or exit risk for your institution view algo orders at any stage? If so, what steps have been taken to minimise the risk of information leakage?
A24	Discretionary traders are not able to see algo orders except outside of the segregated window (8:00 to 16:15 CET) and once the order is completed. This information is never used by SEB staff for any type of trading.
Q25	Can an electronic market making system view algo orders at any stage? If so, what steps have been taken to minimise the risk of information leakage or misuse of information?
A25	No
Q26	Are algo order flows included in any market positioning tools or analyses that other clients may use?
A26	No
SAFETY FEATURES	
Safety features might include fat-finger limits, kill switches or protections that automatically suspend the order when it trades too fast or in certain market conditions.	
Q27	Please describe any in-built safety features you have that may cause an order to be suspended or rejected.
A27	<u>Reject when the order is coming in</u>: • Counterparty Limit is checked (available credit) • There is a maximum size set for all algos that will vary according to the currency pair. That value is configurable. • Price check on the limit price (In the money check for the Aggressive Watch, cannot be too much in the money) • Maximum volume per minute for the TWAP and DynamicX (very high values, more like a “fat finger” check) • Start or end time cannot be in the past. <u>While the order is live:</u> • There is a Kill Switch that enables permitted personnel (trading and support) to stop all algo execution • If the executed volume is a lot higher within a short time period of what is deemed to be reasonable, the algo will be suspended and held for manual approval.
Q28	Please explain what you have done, and will continue to do, to ensure the integrity of the electronic trading system you provide for clients to use (including the system’s reliability, security, capacity and contingency measures).
A28	SEB invests significantly in infrastructure and processing capacity to accurately, reliably and in a commercially sound and competitive manner, price FX, considering all information available to SEB.
TCA	
TCA is an increasingly important part of the service. Where the TCA is not third party it is important to understand internal metrics. For example, if you have ‘beaten risk transfer price’ by 3bp how is that risk transfer price calculated?	

Q29	Do you support any TCA or analytics? If so, please specify which providers.
A29	We can provide BestX compatible data and provide our own TCA
Q30	If you provide proprietary analytics, please describe how relevant metrics are calculated (mid-price, risk-transfer benchmarks, TWAP and VWAP benchmarks etc.). Also, please indicate which source of liquidity (internal, external, and which venues) you use to calculate the different benchmarks.
A30	Risk transfer price benchmarking is based on our own pricing for the volume requested, so effectively the price that the client would get, should he ask for the whole amount as a risk transfer. Order submission or execution start benchmarking compares the algo execution with the top of book on the relevant side of our consolidated price discovery feed. Benchmarking against market average: Time weighted average of the top of book of our consolidated price discovery feed.
Q31	Measuring each child fill against the prevalent spread in the market at each exact point in time is important. Please elaborate on what the bid and ask associated with each child fill reflect (top-of-book, trade size), and what source of liquidity you use to collect this data.
A31	The graph from the TCA report shows the top of book of our own consolidated price discovery feed but we do not compare the child fills to any rate. In the bestX compatible data, the reference price shown is the top of book of the venues we are using for execution
SWAPS	
Algo Users may have a need to roll an algo execution entirely/partially to one or more forward value date/s. If roll forwards are executed with the Algo Provider, it is crucial to understand if the respective swap prices are competitive and whether potentially sensitive order information is exposed. For example, does the swaps trader know which side of the quote the algo execution is on or do they receive a two-sided RFQ? Also, does the swap trader know they are quoting a captive spot fill or does it appear the same as RFQs that are priced in competition with other banks?	
Q32	What information is provided to the STIRT desk when there is a request for swap pricing from an algo order?
A32	The swap is booked automatically at the same price that the client would get if asking for a two way price in competition. The forward desk would only be involved to book manually in exceptional cases if there is a technical issue with the algo. In those cases the forward desk will be able to see the client name and side of the RFQ and will know this comes from an algo.