Version as of 26 September 2025

Algo Due Diligence Template

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	Goldman Sachs ("GS")
Q2	Algo name(s):
A2	Pegged, Dynamic Hybrid/Iceberg/Aggressive, Basket, TWAP, VWAP
Q3	Liquidity type (internal, external, hybrid):
A3	Hybrid
Q4	Products covered (spot, NDF):
A4	Spot, NDF
Q5	Description[1] of algo(s):
A5	Dynamic Hybrid: Algo decides when to post passively and when to aggress. Speed settings aim to increase or decrease the marketability of the order. Dynamic Aggressive: Sweeps to fill against available liquidity, respecting the "No Worse Than" level. Dynamic Iceberg: Dynamic Aggressive until the "No Worse Than" level, then posts passively at the "No Worse Than" level. Pegged: Posts passively internally and externally, and aims to reduce spread cost. TWAP: Uniformly weighted execution over the specified window. Number/size of slices and strategy to execute each slice are customizable. VWAP: Weights execution over the specified window using a proprietary GS estimate of the intraday liquidity profile. Basket: Portfolio algo with Dynamic Hybrid execution on each leg and a maximum slippage target on the basket. Gamma (Short): Recurring stacks of Limit Buy/Sell or Stop Loss orders. Order filled as Bid/Offer crosses the Limit. Further information on the algos and algo logic is available in the "GS FX Algo Deck" available on request.
Q6	Please describe any parameters or controls the user may adjust:
A6	Internally
Q7	Please specify if the product is built internally or externally:
A7	Internally.

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

CONFLICTS OF INTEREST	
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	GS always acts as principal in relation to algo users' orders. Depending on the algo type and market conditions, a portion of the execution done as principal in the context of an algo may be on internal venues. In general, internal and external sources of liquidity are competed against each other subject to considerations of price and expected fill-ratio externally. Exceptions to this rule include trajectory-based algos such as TWAPs that may be required to use internal liquidity in order to remain on trajectory.
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	For certain algos, when 'Franchise matching' is selected by the client as a liquidity group, upon the client placing its order, GS, as principal, will source liquidity to fill that order from inventory of its FX Systematic Market Making ("SMM") business via its eBook. If the net position of the SMM business, as shown on the eBook, is the same direction as the client's order (e.g. the client's order is to buy EUR/USD and the eBook maintains a net long position in EUR/USD), that existing liquidity within the SMM business will be used to fill that order. However, if that existing liquidity is only sufficient to partially fill the client's order, or if the net position of the SMM business, as shown on the eBook, is flat or the opposite direction to the client's order (e.g. the client's order is to buy EUR/USD and the eBook maintains a net short position in EUR/USD), the eBook will seek additional liquidity using GS's proprietary inventory skew model. This will involve the eBook behaving as if it has an additional risk position which is the opposite direction to the client's order which will contribute in part to a skew to the pricing shown to GS' SMM clients. The liquidity sourced to cover this additional risk position will be used, in whole or in part, to fill the client's order. However, where the eBook has a net long or short position in a particular currency pair, the eBook will automatically and independently work to cover that long or short position, irrespective of and in priority to seeking liquidity for the purpose of filling any client algo order to buy or sell the same currency pair. When 'Franchise matching' is not selected by the client as a liquidity group, FX algos and other parts of the business, e.g. risk-management of the marketmaking business, operate independently
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	GS may have an ownership stake in certain venues that are accessed. These do not factor into order routing decisions.
Q11	Please elaborate on your role as regards market risk, counterparty risk, and settlement risk.
A11	The Firm's FX dealing with all its clients is conducted strictly as principal for its own account as a dealer or market-maker. When GS acts in a principal capacity, it acts as an arm's-length party to transactions with its counterparties. The Firm does not act as agent, fiduciary, financial advisor or in any similar

	capacity on behalf of a counterparty and thus does not undertake any of the duties that an entity acting in that capacity ordinarily would perform.
Q12	Is there anything else of which you feel the Algo User should be aware?
A12	N/A
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	Each parent order received will be broken into child orders. Where there are competing child orders, these will be systematically randomised for access to internal and/or external venues. Competing child orders placed on the same venue will be filled in accordance with the logic of that venue and may be based on factors such as queue priority and limit price.
Q14	If two client orders are eligible for execution netting, how does this process work?
A14	Matching takes place at the child order level within an internal matching engine based on the exact order routing logic of the algos involved.
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 on an ongoing basis. Key metrics for venue performance are markouts and fill ratios. These are subject to change based on ongoing evaluation by our team.
Q16	How do you prioritise between different execution venues (both external and internal sources) when routing orders?
A16	This depends on the currency pair and whether the execution is passive or aggressive. When accessing venues, GS utilizes proprietary methodologies designed (but not guaranteed) to improve fill ratios of client algo orders, taking into account factors such as use of firm/non-firm liquidity, latency, and other factors that GS considers appropriate. Algo logic and parameters are updated from time to time with the aim of optimizing performance, as needed, based on historical performance and research. In general, venue preference for aggressive execution depends upon a combination of such factors as price and historical fill ratios, while passive posting is currently restricted to primary markets and mid-pools.
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	Child orders from different parent orders are not aggregated prior to execution, but in practice this likely makes little difference to order routing given different parameters such as speed settings on the algos and the randomization of identical child orders described above.
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	Venues are evaluated on an ongoing 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	GS utilizes proprietary methodologies designed (but not guaranteed) to defend against adverse selection, spoofing and manipulative behavior in the market, taking into account factors such as a proprietary fair value estimate of the market mid-price, markouts from submits/fills, and other factors that GS considers appropriate.
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	Internalisation as regards algos means that GS sources liquidity, as aprincipal, through a combination of risk transfer to the e-book and anonymous GS internal matching. In smart algos, internal liquidity is typically placed in direct competition with external liquidity. Examples of situations in which a child order may be filled internally rather than externally include a) TWAPs filling the end of a dynamic hybrid slice on e-book to stay on trajectory, b) final clean-up submillion fill, c) price tie with an external venue such that firm internal liquidity can be sourced instead of attempting to fill against an uncertain external price with possibly greater market impact.
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	FX algos form part of the FX Systematic Market Making (SMM) business.
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	Overall access to order information is governed by GS's "need to know" policy, which is applicable to personnel of GS, and states that only those employees who have a need to know the information to perform their duties and carry out the purpose(s) for which the information was provided may have access to the information. Employees are bound to abide by, and trained regarding, the GS "need to know" policy. Upon request, algos may also be subject to enhanced visibility reduction on top of firm's need-to-know standard. Pre-trade, orderbooks then do not show the parent order information to sales and trading personnel except the FX eSales client coverage team and senior management.
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	Please see response to Q23.
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	Intra-trade, the trading systems recording fills sent to the eBook for risk transfer contain only the information that a risk-transfer has occurred with no attribution

	to the underlying client or parent order size. Orders in the internal matching engine are marked only as being electronic in origin. For certain algos, when 'Franchise matching' is selected by the client as a liquidity group, GS, as principal, may source liquidity to fill the client's order from inventory of its SMM business via its eBook. When the client's parent order is received, it will be broken into smaller child orders. The eBook will receive certain anonymised information regarding these child orders in the form of aggregated interest to buy or sell, as applicable, a static value of the relevant currency pair. The eBook will behave as though it has an additional risk position in the relevant currency pair which may contribute in part to a skew in pricing shown to SMM clients. The eBook will not receive any more specific information regarding a client's algo order. GS has implemented enhanced internal controls to ensure the eBook receives no details of parent algo orders. These controls exist in tandem with standard 'need-to-know' controls that limit the visibility of order and client information.
Q26	Are algo order flows included in any market positioning tools or analyses that other clients may use?
A26	Anonymously aggregated algo flows or algo child order data may be used in bespoke studies such as models of algo duration and cost.
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	In addition to real-time monitoring by responsible personnel on the desk, GS has risk management controls and supervisory procedures reasonably designed to (1) systematically limit the financial exposure that could arise as a result of market access, and (2) ensure compliance with all regulatory requirements that are applicable in connection with market access. Examples of GS's checks and controls include but are not limited to the following: • Notional value checks • Order quantity checks • Connectivity • Intra-day price move checks • Market Data Integrity • Emergency shutdown procedures • Software change management policy and procedures Optionally, clients may ask us to set fat finger limits on maximum notional by currency pair and on maximum bps distance from market mid of any No Worse Than limit price.
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	GS algo execution engines utilize multiple market data feeds and sources of liquidity. Where a particular source becomes unavailable due to market data quality, or venue connectivity, the execution engines automatically omit that source until it becomes available again. To the extent possible, this occurs without interruption of the client order execution.

	Goldman Sachs understands the importance of information security, including cybersecurity, to protect against external threats and malicious insiders. The firm's cybersecurity strategy prioritizes detection, analysis and response to threat intelligence, cyber risks and malicious activity. GS has an Information Security and Cybersecurity Program which covers the firm's Information Security and Cybersecurity initiatives. For more information, please refer to our Client Security Statement - https://www.goldmansachs.com/disclosures/client-security-statement.pdf Information regarding GS' Business Continuity Planning can be found at: http://www.goldmansachs.com/disclosures/business-continuity.pdf
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	Yes. BestX, Tradefeedr, Virtu (ITG), and in-house.
Q30	If you provide proprietary analytics, please describe how relevant metrics are calculated (mid-price, risk-transfer benchmarks, etc.).
A30	Benchmarks are computed using a combination of external and internal data sources depending on currency pair. Risk transfer estimates are interpolated or extrapolated from GS streaming prices.
Q31	If you provide proprietary analytics, is there a difference in data provided to different users? If so, please elaborate.
A31	There is no difference in standard pre-, intra- or post-trade TCA reporting across our client base, but some clients may request bespoke reporting.
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	Typically, algo rolls are executed electronically. When an electronic roll is not possible, the STIR desk receives a two-way RFQ to price the roll.