

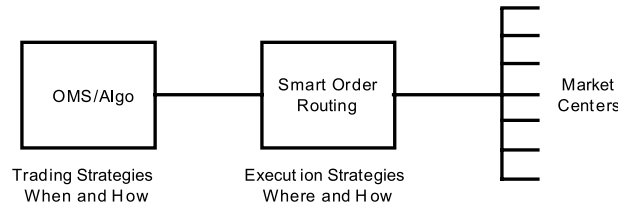


Selero Smart Order Routing and Best Execution Technology (SORBET)

Selero Smart Order Routing and Best Execution Technology (SORBET) provides a wide array of routing and algorithmic capabilities ranging from Direct Market Access, to intermarket sweep orders, to adaptive hybrid strategies for advanced liquidity taking and providing. These capabilities aggregate both displayed and non-displayed liquidity and allow traders to achieve best execution and to maximize profits.

Trading Strategies Versus Execution Strategies

Trading Strategies and Execution Strategies are complements to each other. In general, Trading Strategies, implemented by Order Management Systems and/or Algo Engines, are choices regarding *when and how* to execute a trade, and Execution Strategies, implemented by Smart Order Routers, are choices regarding *where and how* to execute a trade. Both are evolving to adapt automatically, even mid-process, to real-time market conditions (when), and both are evolving to seek liquidity (where). However, they remain distinctly different and complementary.



Trading Strategy	Execution Strategy
VWAP With Volume Target Strike TWAP Target close Adaptive Multi-Strategy Trading	Direct Market Access Reg NMS Routing Market Sweeps Dark Pool Strategies Adaptive Multi-Strategy Execution

Execution Strategies

SORBET provides traders with a variety of execution strategies to choose from, and it allows them to use those strategies as building blocks to create adaptive, hybrid, flows. In addition, it gives traders control over configurable parameters to drive strategies and control over triggers used to drive automated adaptation. Finally, it allows them to change strategies, parameters, and triggers at any time, to reflect changes in their execution priorities and changes in market conditions.

Popular strategies include:

Direct Market Access (DMA)

Some organizations know exactly where they want to send orders, before passing them to SORBET. In those cases, Selero can use Direct Market Access to execute the customer's explicit instructions.

Reg NMS Routing & Intermarket Sweep Orders

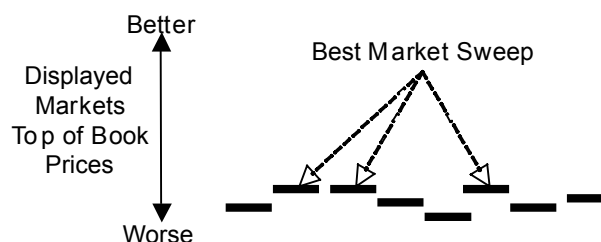
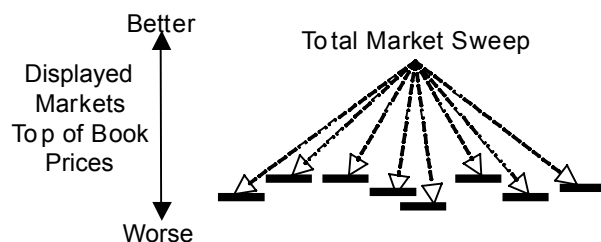
Reg NMS Routing directs orders to displayed markets according to the Order Protection Rule. In addition, it captures both the market data used to select the routing destination(s) and evidence that in fact the order was delivered as specified.

There are multiple types of Reg NMS Routing, and the two most common include sending an entire order to a single destination or performing market sweeps.

The basic sweep matches the top of book quotes in protected markets simultaneously. It can be performed once or many times, and characteristics such as frequency, timing and termination are configurable in SORBET.

Popular intermarket sweep orders include:

- Sweep and Cancel
- Sweep and Post
- Sweep and Cross
- Total Market Sweep – top of book in all markets
- Best Market Sweep – top of book in best markets only



Dark Pool Access

Selero offers several options for accessing the dark pools requested by each customer, such as:

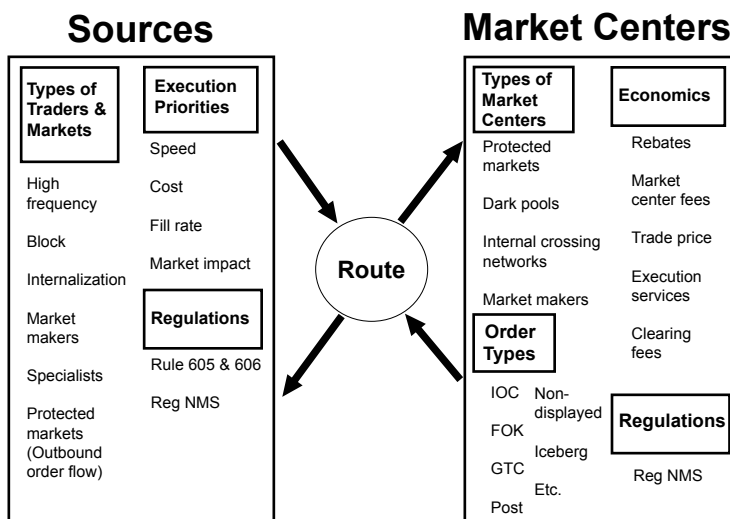
- **Direct:** Direct routing, in its simplest form, is a dark pool version of DMA. Orders sent directly to specified dark pools can ping the pools to locate liquidity, or they can rest in a pool, waiting for new liquidity to flow through.
- **Spray:** This strategy breaks an order into pieces and sprays those pieces across multiple dark pools. Because each spray exposes which dark pools have liquidity and which pools don't, the subsequent spray includes only the pools where liquidity has been found.

Active Limit Orders

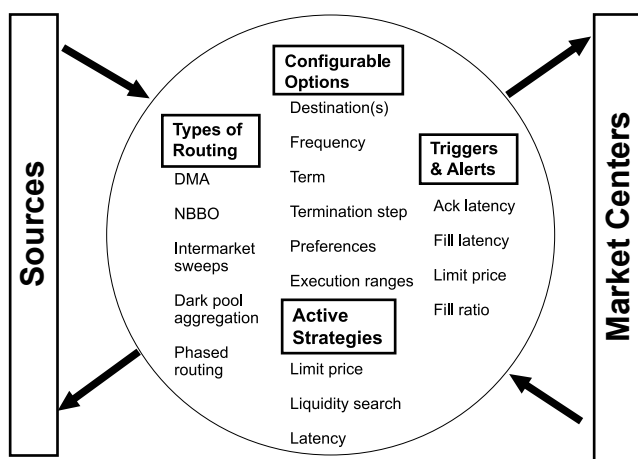
SORBET allows traders to peg a limit order to the market and to keep its price within a certain distance of the market as it moves. For example, the trader can post an order a penny away from the top of book price and leave it there until it gets executed or until the market moves a specified distance away, e.g. ten cents. If the market reaches the specified distance away, SORBET will automatically cancel the original order and replace it with a new order that is pegged to the market based on the new top of book price. Active limit orders allow traders who are willing to take the time the ability to capture rebates and minimize market impact.

Hybrid Strategies

The above strategies can be run individually or together as a hybrid strategy. For example, many traders want to begin by spraying the dark pools and end by sending shares to the protected markets. The option to build-your-own strategy is particularly appealing to block traders who are willing to accept longer execution times in order to minimize market impact.



The world of Smart Order Routing is dominated by variables



Configurability, flexibility and automated active strategies are essential Smart Order Routing capabilities

Heat Maps

Past and present execution data is saved to tell the router which destinations have the best execution rates, fill ratios, etc., by symbol and by market.

Configurable Parameters

SORBET gives traders control over configurable parameters to drive its strategies just as they want. In particular, all of the strategies can be customized in areas such as:

- Destination
- Market preference
- Timing
- Termination
- Triggering events

In addition, traders can also create rule hierarchies if they want to use multiple factors to route orders.

Reporting

Selero provides data for creating OATS, ISO, 606, Self-Help, and Symbol Master Reports.

Built For Speed

Speed has always been a primary concern for SORBET. The product has an in-memory processor, in-memory caching, and asynchronous logging. In addition it uses a configurable number of worker threads that can be dynamically reallocated based on usage patterns, allowing a good balance between latency and throughput.

Selero also uses the same New York data center and network as major exchanges, and it offers customers co-location as an option.

Finally, the system is horizontally scalable using commodity hardware to accommodate any volume or capacity requirements, and it can be easily and economically scaled to achieve sub-millisecond latency.

Execution Services

Execution Services made available from Nunami Services, LLC, member FINRA.

Examples

The following examples describe some of the different definitions of best execution common among traders and the kinds of related strategic choices they might make. The examples illustrate the flexibility of SORBET and some of its capabilities.

These are neither comprehensive nor exclusive.

High Frequency Trader

Example 1 – speed is everything

- i) Sweep the Total Market as quickly and as often as needed
- ii) Terminate when (all shares have been exhausted) OR (1 second has gone by)

Example 2 – speed is critical, but cost is important too

- i) Sweep the Best Market as quickly and as often as needed
- ii) Terminate (when all shares have been exhausted) OR (1.5 seconds have gone by)

Trader With In-House Liquidity

Example – cross no more than X shares externally at a price better than or equal \$Y

- i) Monitor top of book quotes so the aggregate number of shares is below X and the prices are equal to or better than \$Y
- ii) Sweep the protected markets once to be compliant with Reg NMS
- iii) Cross the remaining shares in-house

Multiple Types of Traders

Example – minimizing market impact is most important, and optimizing economics (costs and price) is also important

- i) Spray dark pools
- ii) Focus each subsequent spray on the pools with demonstrated liquidity
- iii) When a spray matches less than Z% of the shares sprayed, post the balance to the protected market offering the best rebate

Block Trader

Example 1 – minimizing market impact is most important, and fill ratio and rebate are next most important

- i) Post an iceberg order in two protected markets offering the best rebates and fill ratios
- ii) Terminate when (all shares have been matched) OR (90 minutes have gone by)
- iii) Cancel any shares that remain

Example 2 – same priorities as above, plus complete execution within an hour

- i) Simultaneously (post an iceberg order in the protected market center offering the best rebate) AND (spray dark pools)
- ii) Focus each subsequent spray on the pools with demonstrated liquidity, and when a spray matches less than Z% of the shares sprayed, stop spraying
- iii) If less than half of the iceberg order has been filled after 59 minutes have gone by, cancel it, spray the dark pools until less than Z% shares are getting matched in each spray, and at that point, send up to 5000 shares to the protected markets using Total Market Sweeps
- iv) Terminate when (shares are exhausted) OR (last step has been completed)
- v) Cancel any shares that remain