



Algorithms and Smart Order Routers

Complements or competitors?

Automation has driven the spread of algorithmic trading systems (algos) while Reg NMS and associated market fragmentation have driven the spread of Smart Order Routing (SOR), and so far, the two applications have complemented each other. Now, market fragmentation is prompting algo vendors to expand their offerings to include components of SOR, and it is prompting SOR vendors to expand their offerings to include components of algos, raising the question are they still complements to each other or have they actually become competitors?

Algos automate 'when' to execute trades, and are expanding to decide 'where'

The first generation of algos used static rules to automate when to execute trades, and they often passed orders to rules-based routers which decided where to send orders for execution. For example, one of the most successful of these early algos, Volume Weighted Average Price (VWAP), releases shares for execution throughout the day according to a pre-defined schedule, and it is an approach that is still popular today.

Now, algo vendors are also taking responsibility for liquidity seeking via Dark Algorithms aimed at aggregating dark pool liquidity (where to execute trades). By definition, these algos specialize in directing orders to hidden liquidity to match as many shares there as they can. They are not designed to access all liquidity— both hidden and displayed – and they are not designed to execute the original order as completely as possible across all available market centers.

SOR automates 'where' to execute trades, and is expanding to decide 'when'

Smart Order Routing is today's term for rules-based routing in the world of Reg NMS and market fragmentation. The first generation of rules-based routing used static rules to automate where to send orders received from algos and OMSs, using variables such as symbol, order size, number of shares, and/or trader-specified market preference. More recently, Reg NMS has complicated order routing, elevating rules-based routing to true Smart Order Routing, because the Regulation has required the use of real-time market data to make routing decisions; created new, complex order types such as intermarket sweep orders; and led to market center proliferation.

Now, SOR vendors see these new execution options as not only complications but also as opportunities to offer more advanced capabilities, and they are providing traders the ability to control both where and when shares will be routed based on real-time market center information such as fill rates and market data.

Both are evolving to adapt to real-time market conditions automatically

Automation and access to real-time market information such as available prices and liquidity are now making it possible for both algos and SOR to adapt to market conditions automatically. For example, algo selection and the release of shares can now be governed by order characteristics and real-time stock prices, and routing destinations can be governed by SOR based on market prices, latency, and fill ratios.

Will algos and SOR become interchangeable?

Not for a while. Today's algos and SOR have a lot to do without trying to be both at the same time! Inputs to algos are getting more sophisticated, market data volumes are exploding, and the range of variables that could be useful to decision-making is growing. In addition, a common criticism of algos in particular is that they have become so complex traders don't fully understand what the algos are doing, making it difficult for the traders to configure them with confidence. So, even though there are examples of algos and SOR moving into each other's domain, algos will continue to lead in advanced capabilities for determining when to execute trades and SOR will continue to lead in advanced capabilities for determining where to execute trades.

As always, best execution will drive system evolution

As always, the quest for best execution drives trader adoption of both algos and SOR, and trader inventiveness in changing markets is the primary determinant of how those systems evolve. While the thought of one product filling all roles may be compelling, the need for traders to understand and harness its capabilities effectively may make it impractical. Either way, the market will decide which solutions hit the mark and which solutions don't.