



DEUTSCHE BÖRSE
GROUP

How Technology and Data are Unlocking FX Automation

Introduction

Designed in conjunction with some of the world's most advanced FX market participants, 360T introduces a feature which facilitates end to end automation and customisation, and which is embedded in its existing Execution Management System (EMS). When combined with the fully integrated and unique 360T Swaps Data Feed (SDF), this solution offers unparalleled control over every aspect of the way an FX order interacts with the global FX market.

The functionality is designed for users to implement a customised, quantifiable and repeatable approach to the execution of orders which are seen as “vanilla” based on the notional amount, currency pair, product or any other attributes of an order.

The innovative and integrated solution tackles the key challenges that all FX market participants face when striving to automate and streamline their workflow management processes, while reducing operational risk and achieving a validated outcome for best execution purposes.

Scalability

360T has developed the automated and customisable solution for a wide array of clients who are at varying stages of creating their execution policies and processes. The rules for execution can reside within the 360T Execution Management System (EMS) or can be received via an integrated, solicited workflow enabling our clients to build out their algorithms where instructions can be delivered with each order. This ensures that our clients' needs will never out-grow the solution.

Controlled Low Touch or No Touch

The inherent flexibility within the 360T EMS means that a workflow can be designed where there is full, minimal or no human interaction at all. Orders can be manually organised and executed, partially automated or fully automated based on a predefined set of custom rules. More details in section „Customisable Workflow“.

Solving the Yield Curve Issue

One of the greatest issues for any participant in the FX market is to ensure that orders with a tenor outside Spot are executed at the prevailing market. Whilst Spot market data is relatively easy to source, achieving accurate market transparency of Forwards and Swaps pricing either on a pre- or post-trade basis, has historically been challenging. With the 360T SDF integrated in the end-to-end automation and customisation feature of 360T's EMS, an independent evaluation of pricing is performed for each negotiation.

360T Market Data Services

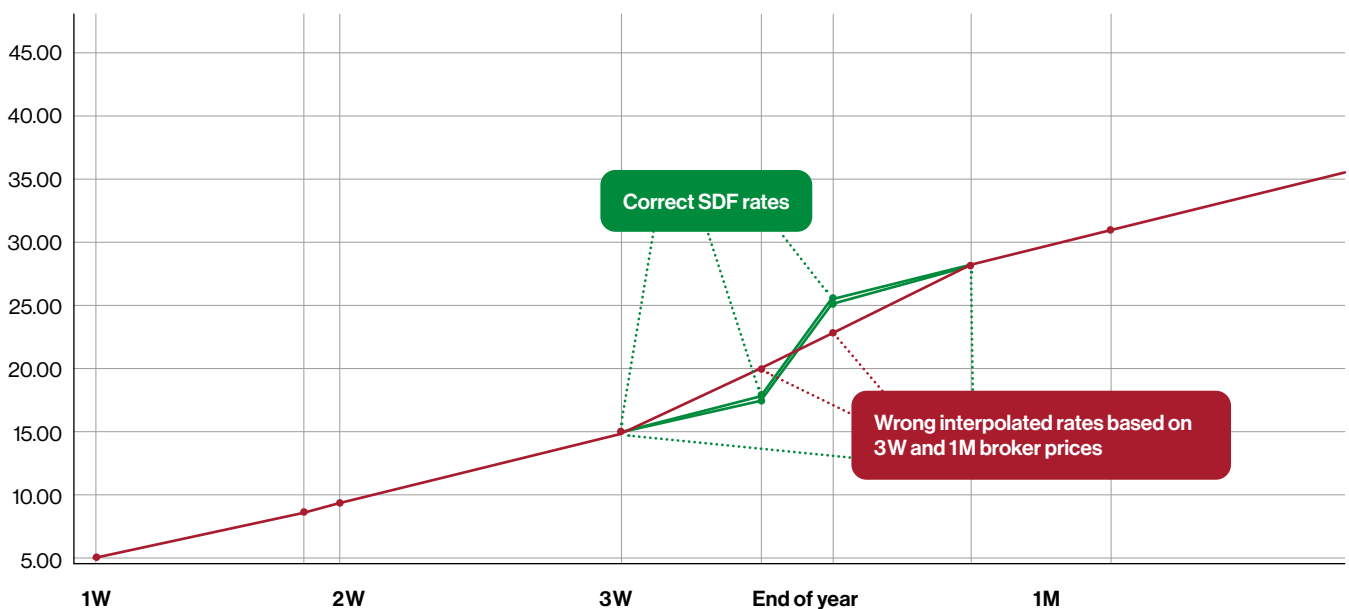
360T Market Data Services are fully embedded in our smart order routing workflow. Live streaming Spot data from the Essential Data Feed (EDF), and streaming Swaps pricing from the Swaps Data Feed (SDF) provide accurate and reliable sources to the client's desired parameters for auto execution within 360T EMS.

The creation of the SDF has brought greater accuracy and transparency to global FX market participants. Sourced directly from 20 primary Swap dealer bank pricing engines, the SDF subscribes to the full interest rate curve across a wide set of tenors from overnight to two years, across 36 currency pairs. Sources are aggregated, sanitised, anonymised and published on a live streaming basis.

The SDF's accuracy is achieved on the strength of its quality contributors, alongside the standardisation of special and broken dates. Such breadth and depth of data allows the SDF to provide a far greater informed and indicative Swap curve Market Data Feed.

EUR/USD Swap Points

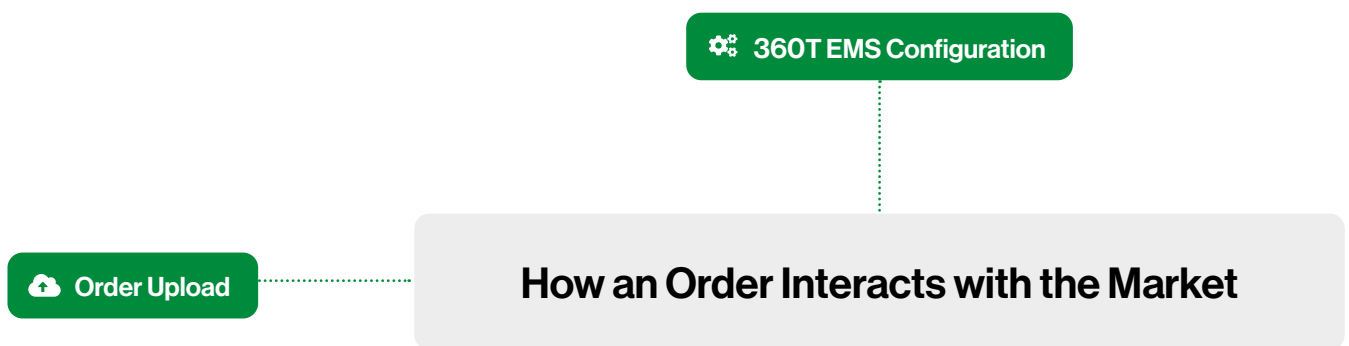
SDF vs contributors with standard tenors only



Automisation and Customisation within 360T EMS




Constraints, Calculations, Auto-execution and Credit

Constraints, Inputs for calculations and credit can be uploaded with each order or can reside within 360T EMS itself. Which orders are sent for auto-execution can also be controlled either in the upload or via rules configured in the EMS.



Customisable Workflow

The workflow can be configured according to client needs, as follows:

Workflow Stage	Low Touch	No Touch
Approval 	Orders can have an approval process before the rules are applied and auto-executed	Orders have no approval process
Broker rejection during negotiation 	Upon a rejection, orders go for manual intervention	Negotiation continues with the rejecting broker removed, provided conditions are still within the constraints set, then an execution will be attempted
Order does not execute 	Upon negotiation time-out, if constraints are not met, the order is sent for pricing via manual intervention	Upon negotiation time-out, if constraints are not met, the order will be cancelled and exported

Maximum Flexibility for Credit

Credit Limits for Brokers

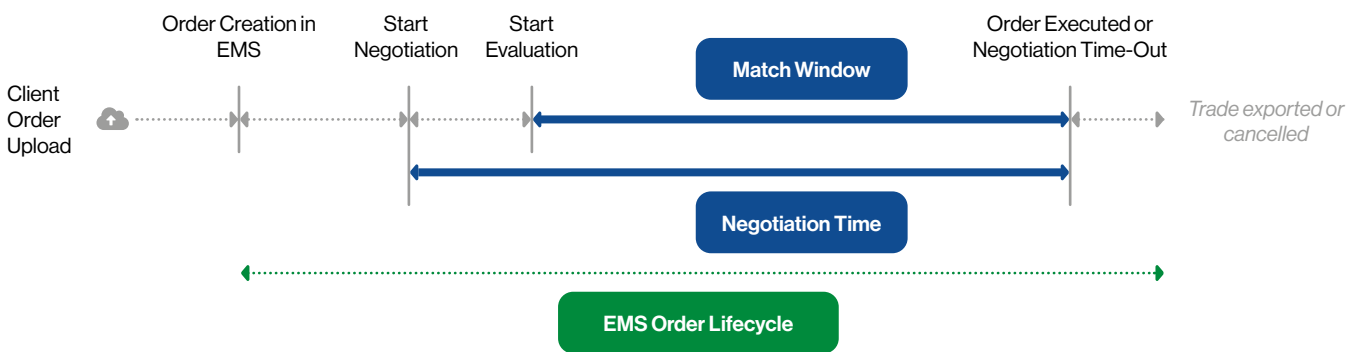
360T provides a credit limit tool available where limits can be set for the brokers as well as for specific traders.

Bank Basket

The bank basket for each order can be controlled within 360T for each account or uploaded with each order

Controlled Timing of Market Interaction

The timing of pricing requests and evaluation of pricing can be fully controlled either through uploaded values for each order or hard coded for all orders.



Timing values are as follows:



Field	Detail	Comment
Negotiation wait time	The number of seconds until a pricing request is sent to brokers after order creation in the EMS	When uploaded with each order can be used to randomize request times for similar orders
Date and time to start negotiation	An exact date and time to send a pricing request to brokers	Can only be uploaded and not hard coded
Time to evaluation	The number of seconds before an evaluation of price is completed after a pricing request is sent to brokers	This gives the opportunity for the broker panel to start pricing
RFS negotiation time	The amount of time the pricing request can remain open before a time-out occurs	

Constraints that Will Stop Execution

Best Execution Policy

To enforce a best execution policy, the following constraints can be configured.

In all cases an execution attempt will only be made at the best price for the order taking into account the direction of the order.

Constraint	Detail	Upload/Hard Coded
Minimum Banks 	The minimum number of brokers that must be pricing before an execution attempt	Can be uploaded with each order or hard coded for all orders
Custodian Pricing 	When uploaded with an order this constraint means that a single broker must be pricing before an execution attempt	Hard coded Y/N

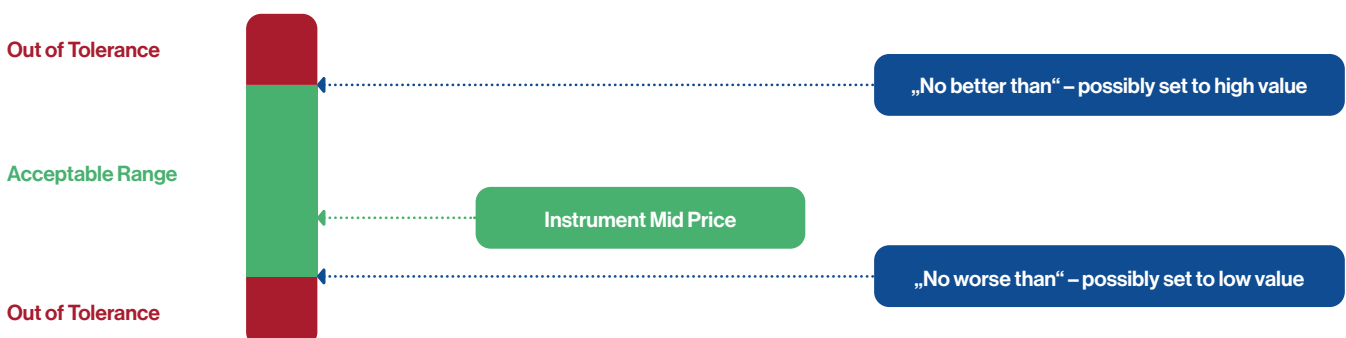
Out of Tolerance

The out-of-tolerance calculation provides a check that the pricing coming from brokers is within a range of a configured mid-price. When uploaded with each order, the out-of-tolerance calculation allows clients to set a range of acceptable pricing. If the pricing is not within the range set during the negotiation, then an execution attempt will not take place. When an out-of-tolerance range is hard coded within 360T EMS, it allows for ranges to be calculated as follows:

- › **A single value which is “no worse than”**
- › **A single value which is applied to “no worse than” and “no better than”**
- › **Two different values which are applied to “no worse than” and “no better than”**

In the case of “no better than”, this is available for clients who wish to filter out quotes that, although in their favour, are obvious mis-quotes that could be rejected.

It should be noted that when uploading % to mid negative values are supported to take advantage of inverse pricing.



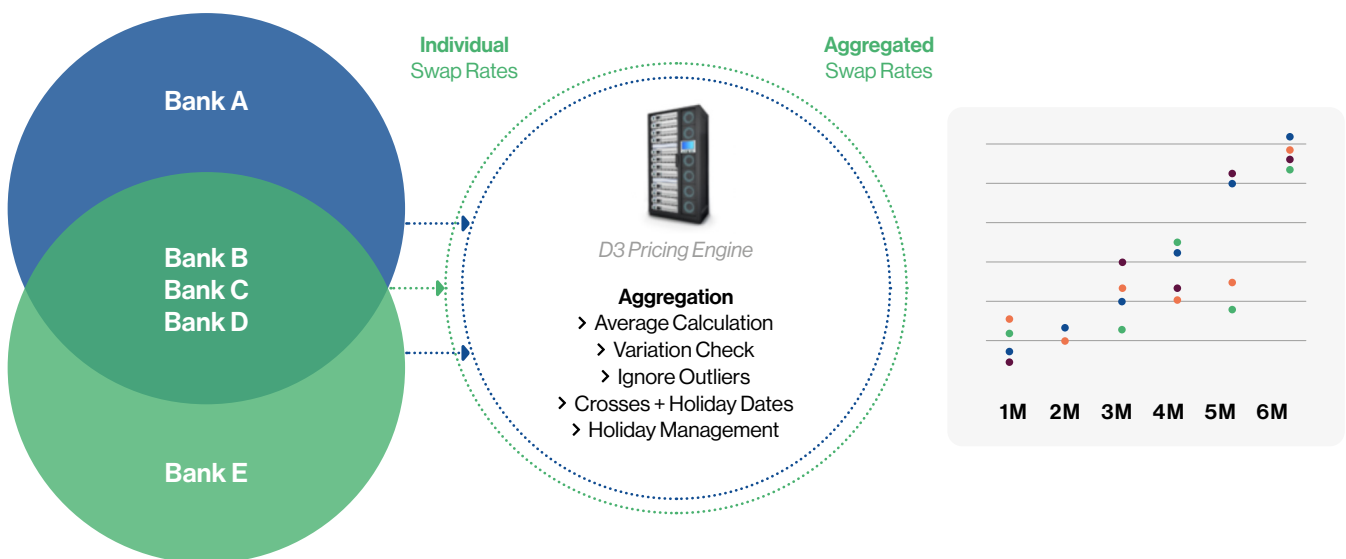
Client is selling in the above example

Mid Price (EDF/SDF)

To construct the final SDF feed, all raw data points are processed through a standardised sanitisation process, where outliers are removed and parameters are imposed to protect the validity of the data. Remaining data points are then aggregated, and a final single aggregated **average bid** and **average offer** is published on the SDF.

A mid is then calculated between this **average bid** and **average offer** rate.

SDF Methodology



Calculations

Out of Tolerance

Calculations are made to establish upper and lower bands; for orders past spot, the yield curve is taken into consideration

Fixed Fees

Fixed costs (such as custodian fees) can be taken into account to establish best overall price for an order

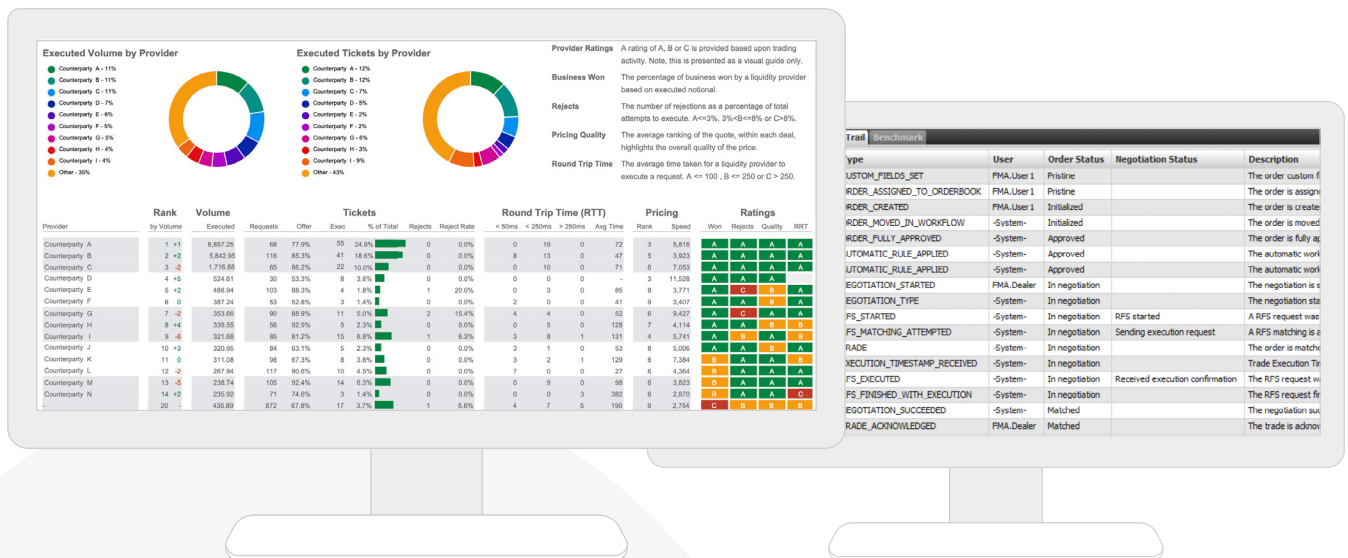
Export (FIX API)

For clients who want to build their own intelligence on how an order performed, the following is available in the export of a trade:

- Financial details of the trade
- All details of the trade
- Mid price at time of execution
- Taken from the same source as is used for out of tolerance
- Competitive quotes
- Non-winning quotes
- Opposite side competitive quotes
- Two-way pricing

Audit and Reporting

An audit trail is supplied for each order of every event including reasons why an order did not execute.



Examples of counterparty measurement and daily non-execution reports are available upon request.

Please do not hesitate to contact your local account manager for more information or contact us at info@360t.com - www.360T.com

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