

THE ULTIMATE TRADE COMPLIANCE TOOL

Use TT® Score's machine learning technology to identify patterns of behavior that pose the greatest regulatory risk with unparalleled precision.



Get complete transparency into your firm's compliance risk and trader behavior with minimal effort. Take proactive steps to prevent disruptive or manipulative trading activity before it becomes a problem.

IDENTIFY RISK

Detect potential high-risk activity using advanced pattern recognition and flag hidden threats well before disaster strikes.

AVOID VIOLATIONS

Discover regulatory and compliance issues before violations happen, preventing fines and enforcement investigations.

OPTIMIZE OPERATIONS

Streamline compliance and risk reviews by identifying, prioritizing and addressing higher risk activity sooner and more efficiently.

DETECT ANOMALIES

Find outlier events by understanding historical trends, environmental context and correlation within firm activity.

INSTANTLY ENABLE FOR USE WITH TT

Immediately monitor and evaluate order activity for all traders and allow individuals to monitor their activity.

SURVEIL USERS OF OTHER PLATFORMS

Use FIX Drop Copy to pull order activity from any platform into the TT platform and store it indefinitely.

ADVANTAGES OF MACHINE LEARNING FOR TRADE SURVEILLANCE

- ◆ Train surveillance models with historical case data—no strict decision trees.
- ◆ Aggregate results of trading activity based on behavioral intent.
- ◆ Score all trader activity based on similarity to patterns from known cases.

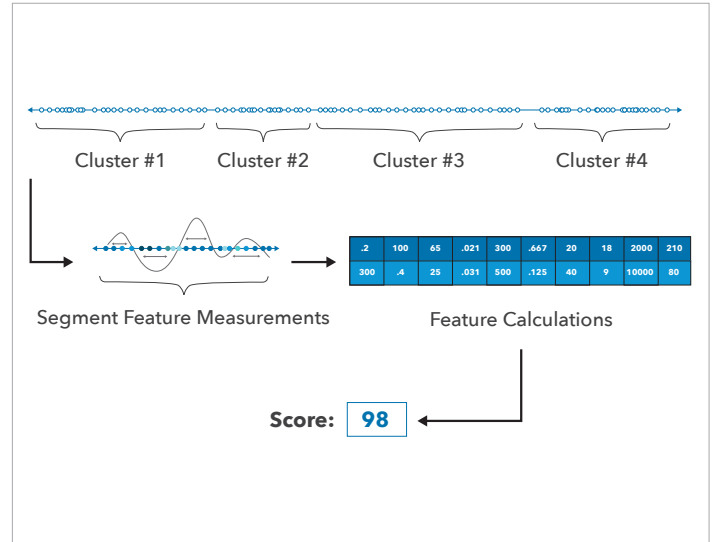
CATCH MULTIPLE TYPES OF POTENTIALLY PROBLEMATIC ACTIVITY

- ◆ Spoofing behavior including layering, flipping and vacuuming
- ◆ Abusive messaging
- ◆ Momentum ignition
- ◆ Pinging and phishing
- ◆ Wash trading



CLUSTER AND SCORE

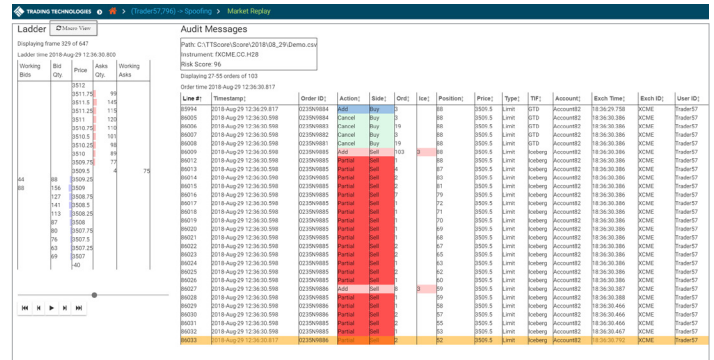
- ◆ TT Score's clustering algorithm segments order activity into "clusters" based on factors such as time, trader, instrument and proximity of other order actions.
- ◆ Each cluster is a slice of time in which the activity is likely related.
- ◆ Models are trained using data from actual regulatory cases and investigations.
- ◆ AI models that adapt over time remove the need for parameter-setting.
- ◆ Clusters are scored based on the degree of mathematical similarity to past regulatory actions.
- ◆ Scores range from 0 to 100 with higher scores indicating a greater similarity to known cases.



VISUALIZE AND INVESTIGATE

TT Score facilitates the prioritization and analysis of post-processed trading data with an interface designed to handle big data and with unique visualizations that assist users in assessing and addressing risk.

- ◆ The Heatmap display highlights traders or accounts generating activity that has a high degree of similarity to regulatory cases.
- ◆ The Outlier chart displays every entity's percent of high-risk clusters compared to the total clusters on a single screen.
- ◆ Scorecard provides a summary of the vital statistics of a cluster as well as an initial visualization of the pattern that was formed by the order activity.
- ◆ Market Ladder Replay provides users with a frame-by-frame replay of the trading activity overlaid with Level 2 market data on a ladder-style interface.
- ◆ The Macro chart displays both the Level 2 market and the trader's data for the entire length of the cluster on a single screen.



Audit Message

Line #	Timestamp	Order ID	Action	Side	Qty	Price	Type	TPF	Account	Exec Time	Exec ID	User ID
88	2018 Aug 29 12:36:30.817	0229N0884	Cancel	Buy	3	88	STO	AccountE1	18.36.30.386	KCME	Trader57	
89	2018 Aug 29 12:36:30.818	0229N0885	Cancel	Buy	14	88	STO	AccountE1	18.36.30.386	KCME	Trader57	
90	2018 Aug 29 12:36:30.819	0229N0886	Cancel	Buy	3	88	STO	AccountE1	18.36.30.386	KCME	Trader57	
91	2018 Aug 29 12:36:30.820	0229N0887	Cancel	Buy	19	88	STO	AccountE1	18.36.30.386	KCME	Trader57	
92	2018 Aug 29 12:36:30.821	0229N0888	Partial	Sell	113	88	STO	AccountE1	18.36.30.386	KCME	Trader57	
93	2018 Aug 29 12:36:30.822	0229N0889	Partial	Sell	2	87	STO	AccountE1	18.36.30.386	KCME	Trader57	
94	2018 Aug 29 12:36:30.823	0229N0890	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
95	2018 Aug 29 12:36:30.824	0229N0891	Partial	Sell	2	81	STO	AccountE1	18.36.30.386	KCME	Trader57	
96	2018 Aug 29 12:36:30.825	0229N0892	Partial	Sell	2	79	STO	AccountE1	18.36.30.386	KCME	Trader57	
97	2018 Aug 29 12:36:30.826	0229N0893	Partial	Sell	2	81	STO	AccountE1	18.36.30.386	KCME	Trader57	
98	2018 Aug 29 12:36:30.827	0229N0894	Partial	Sell	2	71	STO	AccountE1	18.36.30.386	KCME	Trader57	
99	2018 Aug 29 12:36:30.828	0229N0895	Partial	Sell	2	70	STO	AccountE1	18.36.30.386	KCME	Trader57	
100	2018 Aug 29 12:36:30.829	0229N0896	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
101	2018 Aug 29 12:36:30.830	0229N0897	Partial	Sell	2	88	STO	AccountE1	18.36.30.386	KCME	Trader57	
102	2018 Aug 29 12:36:30.831	0229N0898	Partial	Sell	2	82	STO	AccountE1	18.36.30.386	KCME	Trader57	
103	2018 Aug 29 12:36:30.832	0229N0899	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
104	2018 Aug 29 12:36:30.833	0229N0900	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
105	2018 Aug 29 12:36:30.834	0229N0901	Partial	Sell	2	82	STO	AccountE1	18.36.30.386	KCME	Trader57	
106	2018 Aug 29 12:36:30.835	0229N0902	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
107	2018 Aug 29 12:36:30.836	0229N0903	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
108	2018 Aug 29 12:36:30.837	0229N0904	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
109	2018 Aug 29 12:36:30.838	0229N0905	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
110	2018 Aug 29 12:36:30.839	0229N0906	Partial	Sell	2	80	STO	AccountE1	18.36.30.386	KCME	Trader57	
111	2018 Aug 29 12:36:30.840	0229N0907	Partial	Sell	2	87	STO	AccountE1	18.36.30.446	KCME	Trader57	
112	2018 Aug 29 12:36:30.841	0229N0908	Partial	Sell	2	87	STO	AccountE1	18.36.30.446	KCME	Trader57	
113	2018 Aug 29 12:36:30.842	0229N0909	Partial	Sell	2	80	STO	AccountE1	18.36.30.446	KCME	Trader57	
114	2018 Aug 29 12:36:30.843	0229N0910	Partial	Sell	2	80	STO	AccountE1	18.36.30.447	KCME	Trader57	
115	2018 Aug 29 12:36:30.844	0229N0911	Partial	Sell	2	80	STO	AccountE1	18.36.30.712	KCME	Trader57	



For more information about TT Score and a personalized demo, contact your local Trading Technologies representative or email sales@tradingtechnologies.com.

