



The AI-driven OMS

Exploring intelligent automation.

(Part 1)

Order Management Systems (OMS) have existed for over 30 years, marking the introduction of straight-through processing and the computerized management of trading workflows. The focus in the past 15 years has been on standardization, such as FIX, and automation to cut execution costs. However, during this time, the OMS has hardly evolved, serving essentially as the ERP of trading. The system, often irreplaceable, has become nothing more than a **glorified Excel sheet**—dull in both form and function.

Over time, this has led to a calcification of organizational processes, with each OMS harboring vast amounts of implicit knowledge developed, implemented, and accumulated over years.

As we enter the AI computing era, OMSs will be revolutionized for the first time since their inception. In this article, we will look at what AI will bring to this domain, but also **what are the 'Quick Wins'** available to the industry in evolving the OMS.

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Contents

Artificial intelligence	03
The Impact of AI on OMS	04
Powerful Customization	06
Managing Complex Strategies	07
Revolutionizing Efficiency	08
Enhancing Risk Management	09
Transforming Trading Operations	10
The Future of Order Management	11

Artificial intelligence

a brief introduction

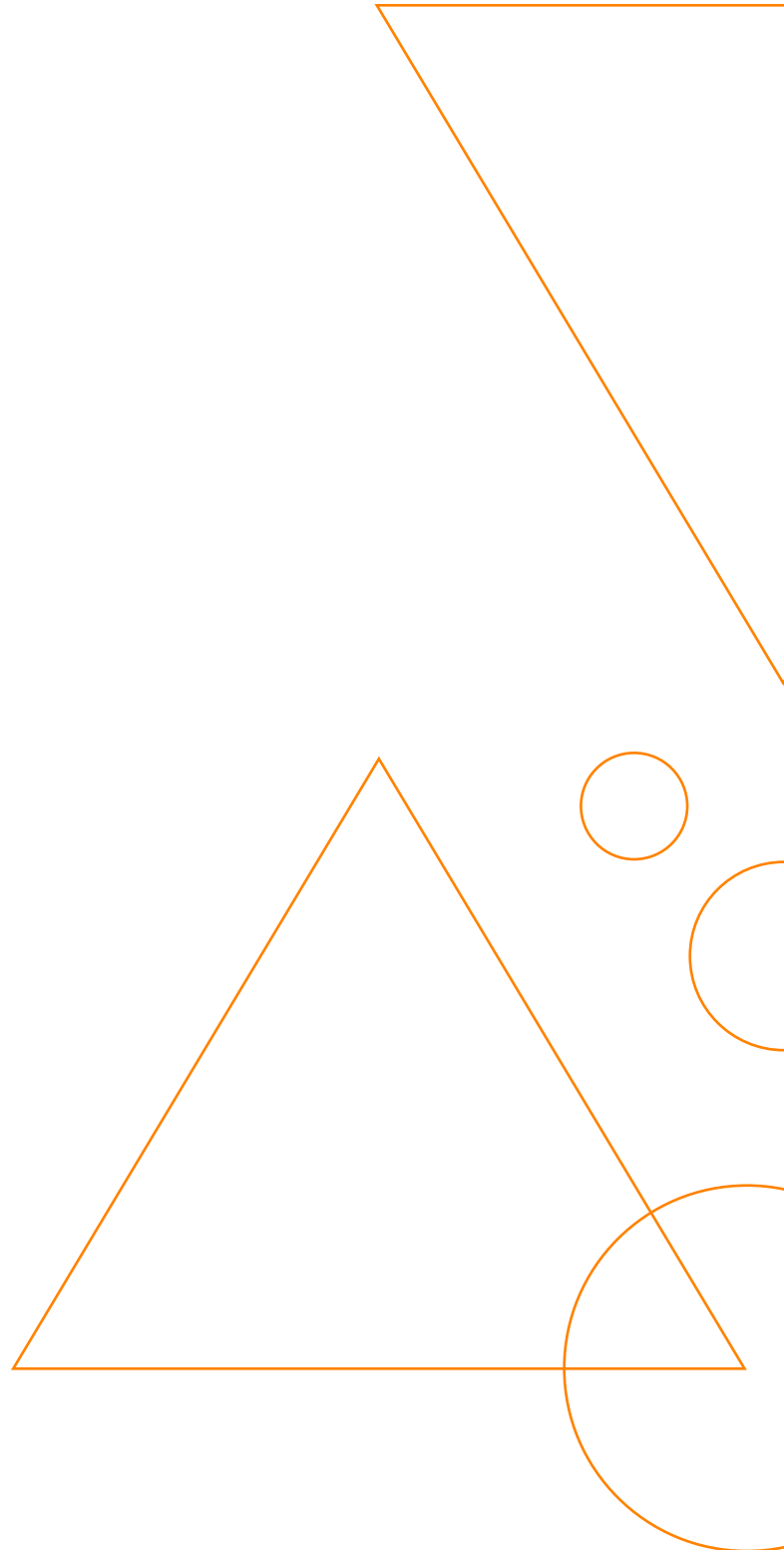
In discussing AI's role in OMS, it's crucial to differentiate between Machine Learning (ML) and AI.

ML, a branch of AI, involves technologies and practices that detect patterns in data to predict outcomes without specific programming.

Within the current systems, AI emerges as the discipline particularly through utilizing Large Language Models (LLMs) being able to **comprehend and respond** to complex queries.

Quod Financial has been utilizing the power of Machine Learning, especially within the realm of algorithmic trading. This approach allows for the identification and exploitation of numerous patterns in trading execution, significantly enhancing the performance and sophistication of these programs. Moreover, Machine Learning facilitates the optimization and management of intricate data patterns.

Artificial Intelligence (AI) represents a more recent and, in some respects, a more substantial technological advancement than Machine Learning, offering deeper insights and broader applications.



The Impact of AI on OMS

and other systems

AI represents the most substantial shift in knowledge-based industries, rapidly influencing software development.

While many proponents of AI focus on the deep learning impact on the execution stack, we believe the real game-changer lies in the **accelerated pace of OMS development** and the facilitation of customization.

The widespread adoption of AI in generating and deploying straightforward applications, especially for Web and Mobile platforms, is a clear testament to its capability for prompt-driven code development. However, its integration into the traditional Order Management Systems (OMS) sector remains notably constrained.

This limitation stems from the poorly structured **code bases that are not conducive to AI-related tasks**, marked by a significant lack of tagging or identification, and reliant on outdated knowledge that underpins these workflows.

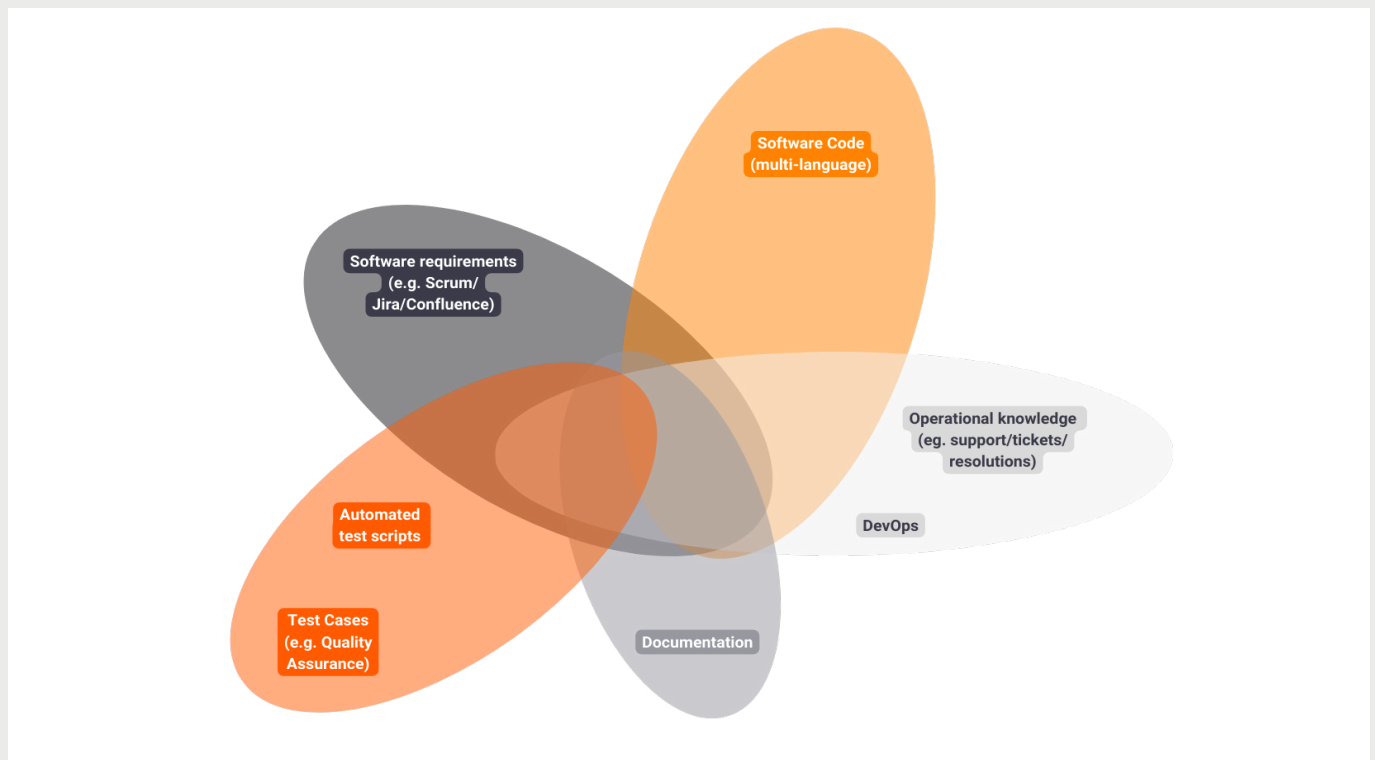


Diagram 1: Holistic AI-driven software engineering for complex application

We anticipate that coding will be the domain most significantly transformed, encompassing not just the automation of coding processes but also profoundly influencing all disciplines involved in defining, building, testing, operating, and supporting such complex applications.

In our projects, we observe significant challenges when transitioning complex software systems. These systems feature many complex workflows, tailored client customizations, and a wealth of historical knowledge, often concentrated among a select group of experts within the organization.

For instance, in order to automate part of the coding, it requires that the old code is re-labelled for a LLM to recognize the purpose of the code base. Another difficulty involves the structured organization of our knowledge into a network, with layers of knowledge dispersed across different nodes. In the below diagram, we illustrate a partial knowledge graph of our Jira system representing just 5% of our entire Jira knowledge base.

To embark on this transformative journey, we've invested in deploying open-source **LLMs, custom-trained on our proprietary knowledge**

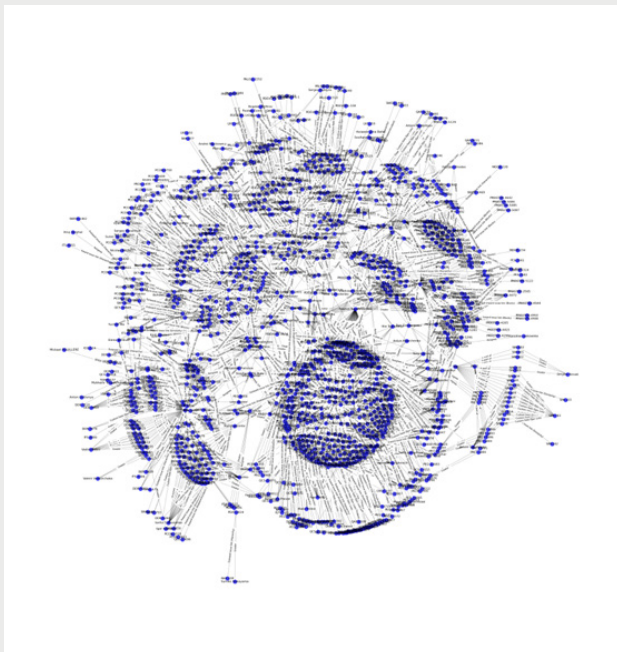


Diagram 2: Quod Financial OMS
Reduced Jira graph knowledge

base. This initiative has birthed a Quod Financial-specific AI, adept at querying our code base, generating test scenarios, and even validating or producing code.

Our 15-year focus on not just being an Order Management System (OMS) vendor but also as a provider of low touch algorithmic trading solutions has shaped our technology stack. **Designed with AI/ML and automation at its core,** our approach eliminates the traditional barriers to adopting this technology in standard OMS solutions.

Over the mid-term, this shift towards AI will significantly enhance the adaptability and customization capabilities of Order Management Systems (OMS). They will become much more agile in responding to changes and will be able to manage complexities at a higher level.

Our transformation benefits from a considerable head start, rooted in our profound understanding of OMS. This foundation is built on our extensive software suite, our commitment to Scrum development practices, meticulously documented methodologies, and a comprehensive knowledge base of real-world issues. Currently, we stand at the threshold of an exciting journey that aims to pivot our entire organization towards an AI-centric model, setting the stage for accelerated progress and innovation.

Powerful Customization

Tailored Solutions for Diverse Needs

Historically, OMSs were developed for specific asset classes, starting with Equities. This often led to siloed systems with extensive customization for particular desks or units. However, the latest innovations, including the OMS offered by Quod Financial, mark a significant evolution.

A defining feature of modern OMS is their capacity for **robust customization**. These systems are designed to conform precisely to the distinct demands of each financial institution, ensuring **flawless integration** with pre-existing processes. From initiating orders to executing trades, a customizable OMS presents a versatile architecture that accommodates the nuanced needs of various asset classes and trading methodologies.

Quod Financial's OMS exemplifies this approach, offering a solution that supports multi-asset, multi-desk, and multi-flow operations. Our emphasis on customization enables clients to tailor the solution, aligning it with their existing front-end and configuration standards without hindering the ability to regularly upgrade the platform and access new features and functionality.

Furthermore, the integration of machine learning and artificial intelligence within modern OMS enhances **predictive capabilities**. These advanced technologies analyze vast datasets to identify patterns and predict market movements, enabling institutions to make more accurate predictions and optimize their trading strategies.

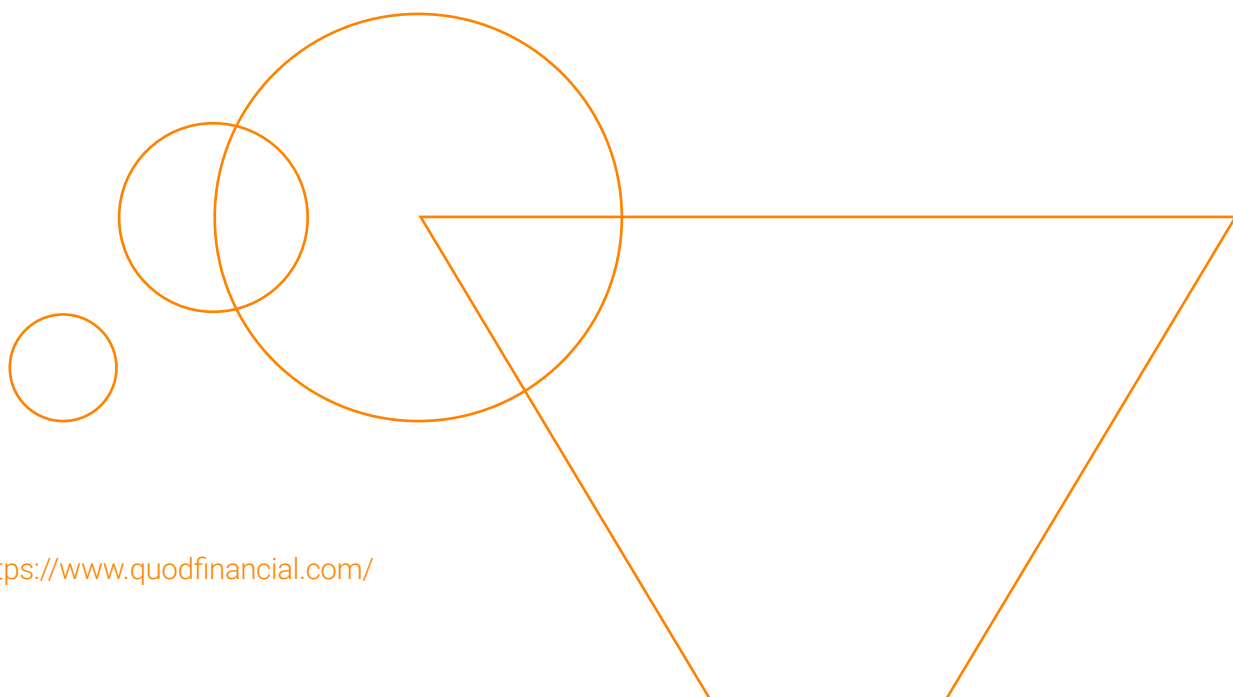
The combination of customization, advanced analytics, and predictive capabilities positions Order Management Tools as indispensable assets for financial institutions striving to thrive in today's dynamic and highly competitive markets.

Managing Complex Strategies

with Multi-leg Support

Today's financial markets demand the ability to execute complex, multi-leg strategies efficiently. Modern OMS solutions support these intricate transactions, enabling traders to manage and execute sophisticated trades with precision and ease. Whether executing spread trades, option combinations, or intricate strategies, a robust OMS ensures precision and efficiency in handling multi-leg orders.

Research by Li, Su, et al. (2023) indicates that the average cost of executing multi-leg trades as complex transactions is lower than the average cost of executing the same trades in simpler scenarios. Hence, transitioning seamlessly between intricate trades, these sophisticated OMS solutions empower traders to navigate the complexities of the financial markets with enhanced cost-effectiveness and precision. Considering the evolving landscape of complex trading strategies, leveraging an advanced Order Management System may contribute to reduced trading costs.



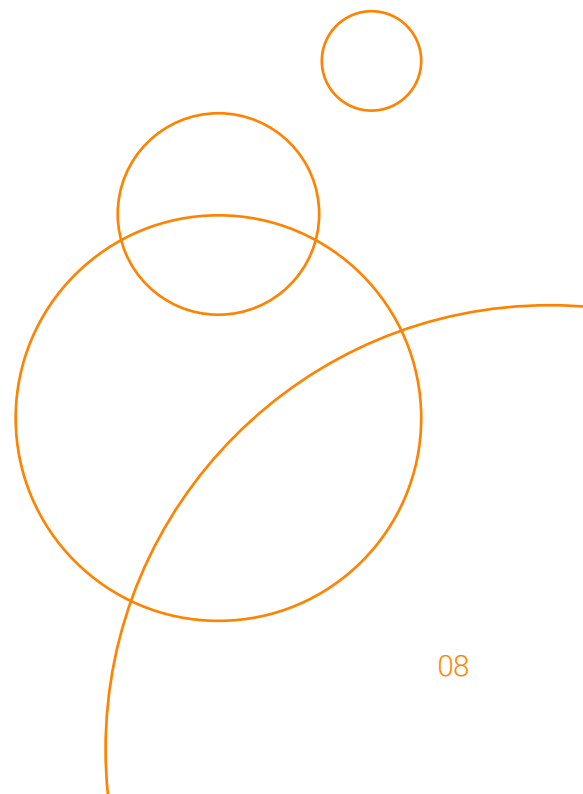
Revolutionizing Efficiency

with Intelligent Automation

Hyperautomation is an emerging technological phenomenon that leverages Robotic Process Automation (RPA), Artificial Intelligence (AI), Machine Learning (ML), and other advanced technologies to implement intelligent automation processes. Its extensive array of business applications makes it a powerful tool and proves advantageous in automating repetitive tasks within organizations. This approach aims not to replace human input but to augment it, **allowing staff to concentrate more on revenue-generating activities** (Madakam et al., 2022).

Automation has become a cornerstone of efficiency in the financial industry, and OMS is no exception. The infusion of intelligent automation into Order Management Tools revolutionizes order handling and execution. Automated workflows not only reduce manual errors but also enhance speed and accuracy in processing orders. From order routing to compliance checks, intelligent automation ensures a streamlined and error-free process, freeing up valuable time for traders to focus on strategic decision-making. By harnessing the power of AI and ML, financial institutions can optimize their OMS to adapt to dynamic market conditions, providing a competitive edge through adaptive and responsive automation.

Furthermore, the collaborative synergy between human expertise and Hyper Automation technologies fosters a work environment where innovation and creativity thrive. As financial professionals embrace the support of automated tools, they are empowered to explore innovative strategies, ultimately contributing to the evolution of the industry landscape.

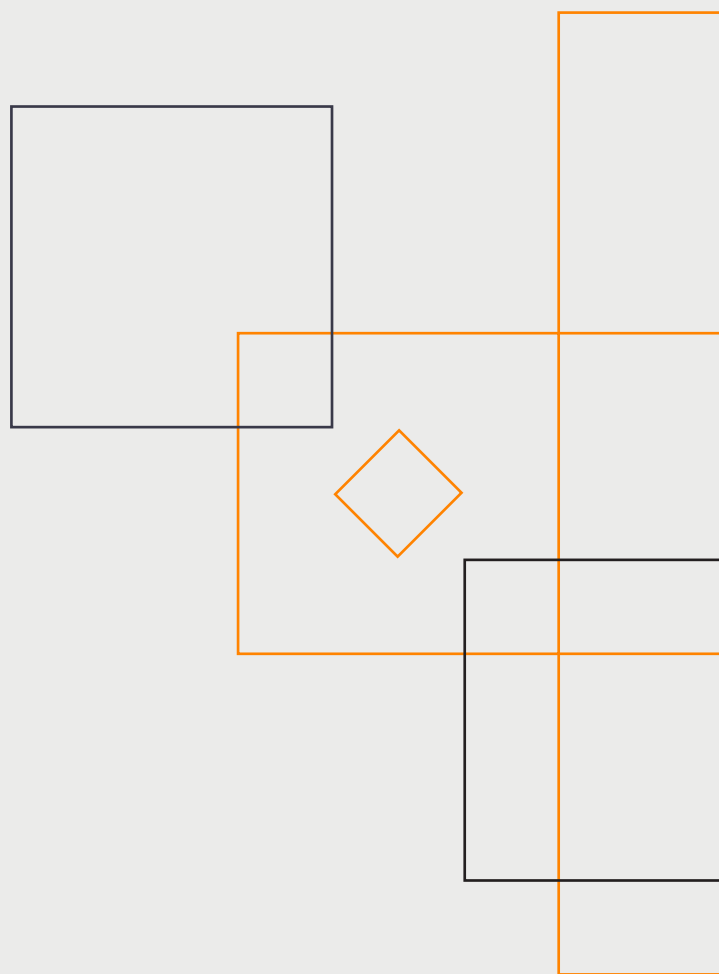


Enhancing Risk Management

and Ensuring Compliance

Innovative OMS goes beyond order execution, playing a pivotal role in risk management and compliance. Real-time monitoring and sophisticated risk assessment tools embedded in OMS platforms enable institutions to proactively identify and mitigate potential risks. Compliance checks integrated into the order workflow ensure that trades adhere to regulatory requirements, providing a secure and compliant trading environment.

Recent regulatory changes, such as MiFID II, SYSC 6 Regulation, and Regulation ATS, significantly impact risk management and compliance for financial institutions. **Adherence to new requirements is essential to avoid fines and penalties.** Financial institutions are advised to conduct risk assessments, implement effective controls, and regularly monitor and review their OMSs for compliance and effective risk management.



Transforming Trading Operations

with Real-time Analytics and Reporting

Advanced OMS platforms offer real-time analytics and reporting capabilities, empowering traders with actionable insights. From transaction cost analysis to performance attribution, OMS provides a comprehensive view of trading activities, enabling institutions to make data-driven decisions and continuously refine their strategies.

Real-time analytics tools play a pivotal role in the modern trading landscape. These tools enable the monitoring of market conditions, identification of trading opportunities, tracking of order and portfolio performance, risk management, and provision of insights into market sentiment.

Examples of Real-time Analytics Tools for OMS

Prominent examples of real-time analytics tools for OMS include the Bloomberg Terminal, Thomson Reuters Eikon, FactSet, and S&P Global Market Intelligence. These platforms offer users real-time market data, news, analytics, and a variety of financial data solutions.

Embracing Innovation

The Future of Order Management

The adoption of innovative Order Management Tools signifies a paradigm shift in how financial institutions approach order handling and execution. The trifecta of customization, support for multi-leg strategies, and intelligent automation reshapes the efficiency and effectiveness of trading operations.

As the financial landscape evolves, those leveraging advanced OMS capabilities will not just keep pace but lead the way in the competitive world of financial markets. Embrace the future of order management and elevate your trading approach with the transformative capabilities of innovative OMS.

The adoption of advanced Order Management Tools is no longer an option but a necessity. By embracing the benefits of customization, multi-leg strategy support, intelligent automation, and real time analytics, financial institutions can elevate their trading operations, and gain a competitive edge.

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Visit to find out more

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