



# Transforming trade surveillance

Your strategy  
for accelerated  
business growth



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From legacy  
compliance systems  
to front-office  
embedded controls



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# Executive summary



Across many institutions, traditional, heuristics-driven surveillance is struggling to keep pace with algorithmic markets—creating alert noise, missed signals, and rising costs. Built for a world of human traders, today's compliance-driven frameworks fail to capture the complexity of algorithmic trading, which now accounts for 70 percent of volumes.<sup>1</sup> Outdated architectures, limited compute capacity, siloed data ownership, and archaic detection systems generate floods of false positives while hindering business growth.

The future-state operating model leverages the front office's deep technical and strategic expertise. It embeds adaptive, context-aware detection systems directly within the trading environment, where the technology breadth and know-how reside. In this model, the front office builds and operates its own controls under formal design standards, transforming surveillance from a reactive, compliance-driven function into a proactive, business-integrated one. This redefines compliance's role to that of an independent validator, not a builder. Compliance sets policy, approves requirements, validates implementation, runs independent testing, and retains ultimate challenge and escalation rights. This shift reduces overhead, provides cost synergies, improves detection efficacy, and realigns incentives across the firm.

Businesses have an opportunity to accelerate growth and gain a significant competitive advantage, rather than simply reducing costs and risks. By leveraging scalable surveillance systems, the vast streams of cross-divisional trade and communication data became sources of business intelligence. That can, in turn, generate tangible value for superior client service.

KPMG LLP (KPMG) can help clients seize this moment by designing multiyear transformation roadmaps, modernizing architectures, embedding controls driven by artificial intelligence (AI), and building the governance structures that enable business growth and regulatory compliance. The time for innovation is now.

<sup>1</sup> Ivan Gufler and Luiss Guido Carli, "The Rise of Algorithmic Trading: Implications for Price Elasticity and Market Competitiveness," The Centre for Studies in Economics and Finance, November 6, 2024 information, inconsistent communication protocols, and dropped data feeds—causing costly delays, regulatory scrutiny, and reputational damage.

# Why the current model is broken

## Surveillance systems built for a bygone era

Most surveillance systems still run on legacy infrastructure. These frameworks were primarily designed for human traders, relying on heuristics that assume discretionary decision-making. When applied to today's algorithms, they misfire: Normal quoting behavior is flagged as suspicious, while manipulative strategies slip through undetected.

## Broken ownership structures

Trade surveillance system ownership traditionally sits in compliance. This structure made sense when information barriers between high-touch trading desks and compliance were essential to avoiding conflicts of interest. In today's automated trading environment, compliance often lacks the business and technical context to understand how strategies operate. This leads to endless escalation loops, asymmetric

## Systemic failures

As businesses scale, the complexity of trading operations increases exponentially:

- Risk exposures become harder to quantify and prioritize.
- False positives multiply as new trading patterns strain legacy heuristics.

The shortcomings of today's surveillance frameworks are not isolated—they are systemic and self-reinforcing. Institutions continue to invest heavily in surveillance, yet the return on that spend is questionable. The cumulative effect is a surveillance model that is expensive, inefficient, and misaligned with the realities of today's trading environment.

Several key weaknesses stand out:



### Talent gap

Few professionals possess the cross-domain expertise required to bridge algorithmic trading, data science, and compliance operations. As a result, detection models are often designed without a deep understanding of how business truly functions.



### Technology gap

Compliance oftentimes lacks modern technology platforms and compute capacity to handle vast amounts of structured and unstructured data.



### Product and venue coverage

Weak reconciliation and monitoring tools frequently result in incomplete or unreliable inputs, undermining the integrity of detection systems.

Gaps across products, and venues coverage persist, leaving blind spots in surveillance oversight.



### Legacy heuristics

Both vendor and in-house models remain overly heuristic, with limited ability to calibrate across subproducts, venues, or execution types in surveillance oversight.

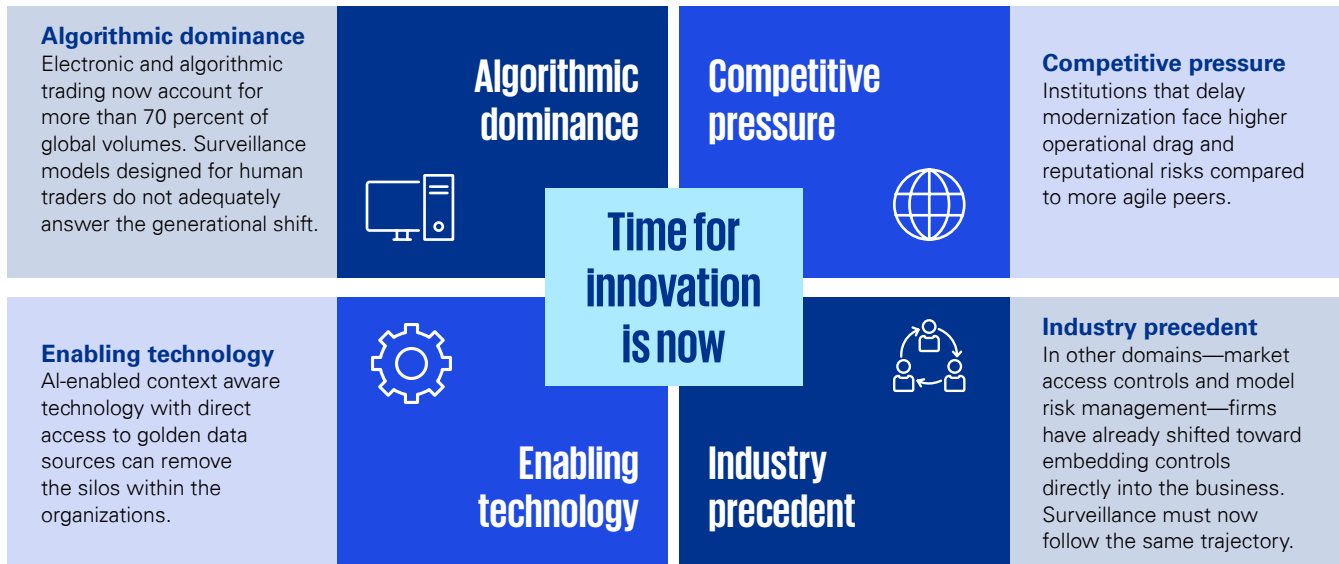


### Cost drag

Firms waste millions annually remediating false positives—a burden that drains resources and increases the risk of missing genuine manipulation due to analyst fatigue. Each missed manipulation event or flood of meaningless alerts erodes trust with regulators, clients, and internal stakeholders.

# The time for innovation is now

The case for transformation is not hypothetical—it is immediate. Several converging forces are creating a tipping point. Firms that seize this moment to rethink surveillance will be more agile, enabling accelerated growth, lower costs, improved detection efficacy, and a stronger competitive edge by better serving their clients. Those that do not will find themselves constrained by outdated architectures and mounting reputational and regulatory risks.





# The future-state operating model

## From compliance-owned to business-embedded controls

The single most important shift in trade surveillance is organizational. For decades, compliance has been the primary owner of surveillance models—a structure that once might have made sense in the era of human traders and strict information barriers. The world has changed, and in today’s algorithm-driven markets, the current-state operating model creates bottlenecks to growth, misaligned incentives, and costly inefficiencies.

By embedding controls into the business, firms can better align surveillance costs with business scale through shared services, streaming architectures, and reusable models—flattening the marginal cost curve. Instead of costs rising exponentially with complexity, surveillance frameworks scale with the business. This allows business to unlock growth capacity that is currently constrained by legacy surveillance systems.

The future-state operating model reframes ownership and responsibility:

	 <b>Current state</b>	 <b>Future state</b>
Trade surveillance	One-size-fits-all systems with siloed process that lack business context.	Front-office engineers embed detection systems directly into the trading algorithm strategies.
Ownership structure	Compliance owns trade surveillance systems through leveraging either vendor-based or in-house-developed controls.	Compliance validates, not builds, serving as an independent check rather than the architect of detection systems.
Cross-domain expertise	Siloed teams have information walls and a lack of understanding business and associated risks.	Cross-domain collaboration between algorithm developers, data scientists, and trade surveillance risk specialists become the new norm, creating shared accountability for the risks across the business.
Tools and technology	Compliance owns the tools and technology distinct from the business, duplicating the associated costs.	Shared services and technology that scales with business, ensuring data quality and venue/product coverage.

This structure can help ensure that controls live where the data and decision-making actually occur while compliance retains its essential oversight role.

## Next-gen trade surveillance features

The next generation of trade surveillance systems will not simply be an upgrade of existing tools; they will be embedded directly into the trading ecosystem itself. Hallmark features include:

- Cross-domain factor alignment: Leveraging the key predictive factors that algorithms compute transforms the detection systems from reactive to proactive mechanisms.
- AI layers:
  - AI-driven synthetic data generation trains and stress-tests surveillance models against edge cases. Synthetic data and scenario generation can materially strengthen coverage of rare events when validated against real-world distributions and governed for bias and drift.
  - Workflow automation can reduce manual effort through prioritization, deduplication, and enrichment, with human-in-the-loop oversight for high-risk decisions.
  - Replay capabilities and contextual logging enable true explainability.
  - AI-integrated reporting feeds and standardized audit trails designed for regulator consumption, ensuring transparency and trust.



## Benefits of the future state

The business case for this model is compelling. By integrating surveillance with shared services and technology, firms can transform it from a defensive cost center into a strategic value generator (e.g., client behavior analytics for improved liquidity provision, cross-venue execution quality insights, and proactive anomaly detection that informs risk mitigation and client service). The vast amount of trade and communications data collected becomes a rich source of business intelligence, allowing for proactive analysis that enhances profitability, improves efficiency, and serves clients for a distinct competitive advantage.

1

### Accelerated business growth:

Faster onboarding of new clients, venues, and products that supports accelerated business growth

2

### Lower cost of ownership:

Significant reduction in false positives and remediation costs with sharper identification of manipulative intent

3

### Regulatory trust:

Transparent, explainable frameworks that regulators can audit and rely upon

4

### Enhanced client service:

Proactive analysis and enhanced client service as a result of the vast amount of cross-divisional data collected being a rich source of business intelligence

5

### Data integrity:

Stronger data integrity with fewer dropped feeds or missing data with direct connectivity to golden source

6

### Data coverage:

broader coverage across products and venues, clients, and accounts

# How KPMG can help

Achieving the future state of trade surveillance requires more than technology upgrades. It demands a coordinated transformation across strategy, architecture, AI enablement, and governance. KPMG is well-positioned to guide clients in connecting the dots between the two historically siloed domains, bringing deep regulatory knowledge, cross-domain specialization experience, and demonstrated transformation capability.

## Diagnostic and strategy

The first step is to understand the current state and set a clear path forward:

- Conduct independent assessments of surveillance effectiveness, including data feeds, detection models, and organizational ownership.
- Design multiyear transformation roadmaps that balance short-term remediation with long-term innovation.

## Regulatory alignment

KPMG brings credibility and independence to help clients align with regulatory expectations while still innovating:

- Regulator engagement: Develop proactive harmonization plans with regulators to frame the future-state operating model as enhancing oversight.
- Regulatory mapping: Help ensure the embedded controls are tied to regulatory guidance and mandates.
- Validation frameworks: Define how compliance can validate and audit front-office surveillance systems.
- RegTech integration: Help clients adopt supervisory technology that can generate regulator-ready audit trail and reports.
- Global harmonization: Guide institutions on aligning next-generation surveillances with regional requirements while reducing duplication.



## Architecture and implementation

Future-ready surveillance requires a modern, scalable infrastructure:

- Redesign ownership structures to create leaner, more integrated compliance, risk, and front-office engineering functions.
- Build real-time, resilient data pipelines with reconciliation controls to help ensure data integrity.
- Identify and map critical algorithm parameters that would feed into the detection systems.
- Integrate near-real-time surveillance via sidecar services and pretrade hard controls where appropriate, balancing performance, independence, and explainability.

## AI enablement

AI and generative AI are accelerators of the next-generation model:

- Implement AI frameworks for adaptive, business-aware detection controls.
- Deploy GenAI solutions into alert remediation workflows, regulatory reports, and audit trails.
- Design synthetic data generators and use cases to test and calibrate surveillance systems under varied scenarios.

## Governance and change management

Sustaining the transformation requires organizational and cultural alignment:

- Support new ownership models that balance accountability across compliance, MRM, and trading.
- Create business control frameworks that regulators recognize as transparent and auditable.
- Upskill cross-domain teams to help ensure long-term adoption and resilience.

# Call for action

Yesterday's surveillance systems cannot govern tomorrow's algorithm-driven markets. Firms that continue patching legacy systems will face exponentially rising costs, regulatory frustration, and strategic drift. The path forward is clear: embed adaptive, business-aware controls into the trading systems themselves—with compliance as validator, not builder.

Regulatory expectations and market dynamics are increasingly pushing firms toward modernized, scalable surveillance. This transformation is the next frontier of market integrity and business growth. KPMG is well-positioned to guide clients through this journey—bringing independent perspective, cross-domain expertise, and regulator trust.

Now is the time to rethink, innovate, and design next-generation trade surveillance systems that enable accelerated business growth.

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