

Digital asset surveillance for financial institutions

**Where market integrity meets
crypto complexity**

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Introduction

Financial institutions are rapidly adopting trading in digital assets, fueled by clearer supervisory guidelines and rising client demand. However, digital assets operate under different structures and dynamics, making traditional approaches to market oversight less effective.

An approach that combines on-chain and off-chain data can help organizations effectively prevent and detect market abuse in digital assets and enable the right guardrails to be put in place to scale digital asset operations.



Supervisory expectations shaping digital asset risk management

Regulatory clarity and supervisory expectations for digital assets over the recent past have evolved from exploratory guidance to clearly defined requirements. Recent developments in the European Union's (EU's) Markets in Crypto-Assets (MiCA)³ and heightened US enforcements firmly signal that digital asset activity is now within the regulatory perimeter.

As regulatory clarity increases, institutional and corporate clients are increasingly engaging with digital asset offerings provided by financial institutions. Financial institutions in turn are working to reinforce that trust by building strong monitoring and evidence-based control frameworks.

Technology has also matured and has reached a point in which institutions can operationalize digital asset activity with greater control. Advanced analytics and machine learning now enable firms to move beyond threshold, rules-based monitoring and toward adaptive detection that is in line with how digital asset markets behave.

Regulatory actions and market structure developments in digital assets

- In the US, the Commodity Futures Trading Commission (CFTC) recovered a record \$17.1 billion in 2024,¹ a majority of which was digital asset-related. This heightened scrutiny shifted market focus to build a digital asset surveillance framework.
- The Digital Asset Market Clarity Act of 2025 (CLARITY)² split the jurisdiction of the Securities and Exchange Commission (SEC) to govern digital investment assets and for the CFTC to oversee digital commodities
- On June 9, 2023, Markets in Crypto-Assets Regulation (MiCA) established a single EU rulebook for crypto-asset issuance and trading. The deadline for all Crypto Asset Service Providers (CASPs) will be July 1, 2026.



Levers that differentiate surveillance in digital assets over traditional

Traditional markets are built around centralized venues, standardized data models, identifiable participants, and defined trading sessions. Surveillance frameworks are designed around these assumptions, relying on structured order books, consistent identifiers, and linear trade life cycles.

On the contrary, digital asset markets are fragmented, always-on, and driven by on-chain and off-chain activity with limited attribution and low standardization. This environment requires cross-venue, cross-chain, behavior-driven surveillance rather than traditional venue-centric oversight.

Key differences between traditional and digital asset surveillance

Theme	Traditional asset surveillance	Digital asset surveillance
Market structure	Centralized exchanges and regulated trading venues	Fragmented ecosystem across centralized exchanges, decentralized exchanges, and liquidity pools
Price discovery	Prices are primarily formed through centralized exchange order books using price-time priority	Mixed price discovery as centralized exchanges use order books with price-time priority; while in decentralized venues, prices are determined by algorithmic formulas and depend on liquidity in the pool, trade size, and pool balance changes
Trade life cycle	Follows a single, linear life cycle where orders are placed, executed, cleared, and settled within a centralized market infrastructure	Follows a hybrid life cycle where order and execution activity occurs off-chain on exchanges, while asset movements and final confirmations occur on-chain on a blockchain ledger; these blockchain-recorded transactions exist outside the exchange system and must be independently ingested, reconciled, and correlated with off-chain order data to enable complete trade reconstruction and adequate surveillance coverage
Participant identification	Client and legal entity identifiers are embedded in trading systems	Wallet addresses, exchange accounts, and smart contract interactions having limited attribution
Data standardization	High degree of standardization (e.g., FIX, ISO formats)	Low standardization; venue- and protocol-specific data structures

Off-chain events are activities recorded in typical traditional systems.

On-chain events include activities recorded on blockchain like wallet-to-wallet transfers, transaction hashes, and token mint/burn events.



To address these realities, organizations should rethink surveillance across five key dimensions

1. Move from venue-centric to cross-venue monitoring:

Market abuse in digital assets frequently spans multiple venues and chains. Effective surveillance requires consolidating activity across centralized exchanges, decentralized protocols, and over-the-counter (OTC) trading to identify patterns that would not be visible in isolation.

2. Integrate off-chain and on-chain intelligence:

Orders, trades, and order-book behavior should be analyzed alongside on-chain signals such as wallet movements, token transfers, and smart-contract events. Linking these data sets provides a full view of the transaction life cycle and enables detection of complex manipulation strategies.

3. Tailor detection for CeFi and DeFi environments:

Centralized finance (CeFi) environments benefit from adapted traditional surveillance patterns calibrated for continuous trading and fragmented liquidity. On the other hand, decentralized finance (DeFi) requires a different lens such as monitoring transaction sequences, state changes, and interactions with automated protocols.

4. Apply AI to detect evolving behaviors: Static rules alone are insufficient in fast-evolving digital asset markets. AI-driven analytics such as anomaly detection, behavioral clustering, and pattern recognition enable firms to identify emerging abuse typologies, adapt to new token dynamics, and reduce alert noise while maintaining explainability.

5. Embed governance and human judgment: AI enhances detection, but accountability remains critical. Clear policies, defined escalation paths, and human-in-the-loop review ensure that automated insights translate into defensible decisions.

Conclusion

The mainstreaming of digital assets within US banking can create new opportunities and new risks. Regulatory clarity is advancing, but so is the sophistication of market abuse. Banks, clients, and service providers should continuously enhance their risk management and controls frameworks including surveillance as digital asset products scale. Adaptive monitoring is essential in fragmented, fast-changing crypto markets where behaviors and abuse patterns can shift quickly. Over time, firms that refine scenario logic, recalibrate thresholds, broaden coverage, and utilize AI-driven analytics may be better positioned to strengthen market integrity, sustain stakeholder confidence, and maintain regulatory readiness.

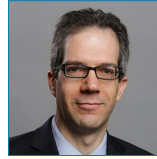


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2. US Congress, [H.R.3633 - Digital Asset Market Clarity Act of 2025](#), 119th Cong. (2025).
3. MiCA Regulations, "[Markets in Crypto-Assets Regulation](#)," accessed March 2026.

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