

FAMARA - MARKET ABUSE

The Market Abuse tool is an **advanced solution for detecting and analysing anomalies in financial transactions**, intelligently combining expert business rules with artificial intelligence to **maximise detection accuracy while maintaining operational transparency.**

This hybrid approach offers the best of both worlds: **the reliability and explainability of business rules**, enhanced by AI's ability to learn and **detect complex patterns.**

STRATEGIC OBJECTIVES

- Maximise detection by combining expert rules and predictive AI
- Drastically reduce false positives through dual validation
- Automatically adapt detection to new market patterns
- Maintain explainability for regulatory compliance
- Continuously evolve through machine learning

OPERATIONAL OBJECTIVES

- Multi-layer detection: rules + AI + cross-validation
- Smart scoring combining both approaches
- Self-learning on validated historical data
- Full traceability of decisions made by each engine

DUAL-ENGINE ARCHITECTURE

Business Rules Engine (Deterministic Logic)

- Expert rules based on AMF/ESMA regulations and AMAFI scenarios
- Configurable thresholds by instrument type and client profile
- Transparent and auditable logic
- 100% explainable results

Artificial Intelligence Engine (Predictive Logic)

- ML algorithms: Isolation Forest, One-Class SVM, Autoencoders
- Detection of complex, non-linear patterns
- Continuous learning on new data
- Probabilistic anomaly scoring (Critical, High, Moderate, Low)

Sample scenarios

Insider dealing
Trades ahead of major announcements

Market manipulation
Wash trading patterns

Transactions
in securities under surveillance

Suspicious timing
Trades outside normal trading hours

AI-Powered Detection

- Atypical behaviours not covered by rules
- Emerging patterns of new types of market abuse
- Suspicious gradual behavioural shifts

Hybrid Cross-Validation

- **Strong consensus**: both engines detect the same anomaly
- **Analysed divergence**: one engine detects, the other does not – investigation
- **Mutual learning**: rules inform the AI and vice versa

Advanced Hybrid Dashboard

Summary View

- Risk heatmap combining both engines
- Predictive trends based on AI learning
- Multi-layer alerts with confidence level
- Performance metrics for each engine

Analytical View

- Score breakdown (rules vs AI)
- Enhanced explainability with SHAP values for AI
- Historical comparison of engine performance
- Parameter adjustment recommendations

ADVANCED FEATURES

Supervised Self-Learning

- Feedback loop: human validations improve the AI
- Automatic retraining on newly validated data
- Adaptation to market and regulatory changes
- Drift detection and automatic readjustment

Evolving Rules Engine

- New rule suggestions based on AI findings
- Automatic optimisation of existing thresholds
- Detection of obsolete or underperforming rules
- A/B testing of rule changes

Enriched Hybrid Reports

- Dual justification: rule logic + AI explanations
- Confidence level for each detection
- Tailored investigation recommendations
- Risk predictions for future transactions

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