Helping Financial Services Institutions Control Financial Crimes Risk with Associative Memory AI

By providing transparency, precision, and speed to insight, Intel® Saffron™ Anti-Money Laundering Advisor helps financial institutions minimize time and effort to reach confident decisions

This solution brief describes how to solve business challenges through investment in innovative technologies.

If you are responsible for...

- **Business strategy:**
  You will better understand how a decision system powered by AI will enable you to successfully meet your business outcomes.
- **Technology decisions:**
  You will learn how a decision system powered by AI works to deliver IT and business value.

Executive Summary

Total financial crime is at an all-time high. According to the UN, the estimated amount of money laundered globally in one year is two to five percent of global GDP, or $800 billion to $2 trillion.[1] In 2016 alone, approximately 15.4 million consumers were victims of identity theft or fraud, resulting in $16 billion in losses.[2]

Intel Saffron unleashes the next wave of artificial intelligence with associative memory. Intel Saffron simulates a human's natural ability to learn, remember, and reason in real time. It mimics the associative memory of the human brain—the aspect of human memory that instantly relates current observations with the remembered past. This permits Intel Saffron's first product—Intel® Saffron™ Anti-Money Laundering Advisor—to rapidly surface similarities and anomalies hidden in dynamic, heterogeneous data sources, while accessing an infinitely larger dataset than its human counterpart. Unlike traditional machine learning methods, Intel® Saffron™ AML Advisor requires neither domain-specific models nor training and retraining. This results in an improved time to insight. Intel® Saffron™ AML Advisor is architected end-to-end with Intel® technologies to enable a high level of performance.

By providing businesses with a solution that learns and adapts automatically, Intel® Saffron™ AML Advisor helps financial institutions benefit from the knowledge in their data to fight financial crimes risk in a business environment that is increasingly taxed with ever stricter and more complex regulations.
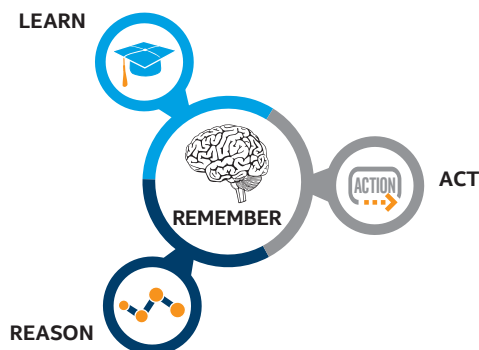

Figure 1. Intel® Saffron™ AML Advisor delivers actionable insight by replicating the human ability to learn and reason in real time.

Solution Benefits

- Unification of heterogeneous structured and unstructured data from multiple sources

- Model-free approach

- Dynamic entity search across the unified data set using any combination of data attributes or natural language search

- Flexible risk ranking of alert output or customer behavior data

- Easily create customized risk signatures based on human or machine-recommended dimensions

- Transparent actions and recommendations support audit and regulatory understanding

- Faster time to deep insights

Business Challenge: Plenty of Data but not Enough Insights

Banks and financial organizations often have 50 or more applications that require use of the same personal financial data. Business and technology leaders in financial institutions want a more efficient way to manage their data, putting an end to moving and replicating data, which is costly and increases risk. Financial crimes compliance also requires comprehensive reviews of enterprise data, resulting in a very high-cost burden associated with compliance. Financial institutions seek innovative ways to lower these costs while mitigating financial crime and reputational risks. They also want the enhanced visibility that results from unified knowledge across multiple data sources, enabling them to better serve their customers. Intel® Saffron™ AML Advisor uses associative memory AI to discover new insights for growing businesses, meet compliance and regulatory requirements, and fight financial crime with a suite of features, including:

Knowledge Index

Intel® Saffron™ AML Advisor unifies structured and unstructured data linked into a 360-degree view at the individual entity level, obtaining insight from the patterns found across boundaries wherever the data is stored.

Scalability

To fit a range of enterprise financial crimes organization-requirement scenarios for storage, speed, and performance, Intel® Saffron™ AML Advisor is offered in a variety of sized-to-fit modules.

Continuous Learning

Unlike traditional machine learning methods, Intel® Saffron™ AML Advisor requires neither domain-specific models nor training and retraining, resulting in improved time to insight. The financial services industry faces the challenge of, "What will be important tomorrow?" In this dynamic landscape, actionable insights realized in hours or days rather than weeks or months is an imperative.

Analytic Augmentation

Intel® Saffron™ AML Advisor reduces the human cognitive burden by automating thought processes that work with and for the investigators allowing them to focus on higher value activities. While humans always have the deciding role in outcomes, this approach results in an accelerated path to decision for investigators and analysts, helps reduce false positives, and provides higher value Suspicious Activity Report (SAR) production. Much like having your own internal "red team," Intel® Saffron™ AML Advisor provides easily customized risk ranking and anomaly detection to augment, validate, improve existing traditional monitoring and detection systems, and to support human-led investigation and analysis.

Transparency

Banks collect the data necessary to comply with various regulations but often must pay non-compliance fines reaching into the billions due to human error or missed deadlines. Intel® Saffron™ AML Advisor explains the rationale behind its recommendations to help banks meet compliance requirements, mitigate fines, and reduce countless hours reworking reports. This greatly contributes to cost savings and reducing compliance risk.

Solution Value: Putting Data to Work

Financial institutions wanting to increase their competitive capabilities in the market can turn to Intel® Saffron™ AML Advisor. Mimicking how the human brain analyzes data, with the ability to learn, remember and reason, Intel® Saffron™ AML Advisor's associative memory AI delivers distinct value to financial institutions, enabling them to:

- **Unify heterogeneous data sources** (structured and unstructured), leading to deeper insights.

- **Improve the productivity** of financial investigators and analysts by reducing false positives and producing higher value SARs faster than machine learning and deep learning solutions.

- **Slash time to insight** by learning instantly and continuously, realizing actionable insights in hours or days rather than weeks or months, and helping to decrease financial losses due to fraud and compliance fines.

- **Provide transparent, explainable,** and auditable results to move beyond black-box models and enhance the organization's decision-making confidence.

Beyond a Single Technology—Moving Toward Complementary Learning

Intel Saffron AML Advisor's associative memory AI approach, which delivers fast, one-shot learning by associative and episodic memories, augments financial-crimes monitoring applications using traditional machine learning. Traditional statistical machine learning is appropriate to learning static patterns that are global (assuming homogeneity for the Law of Large Numbers) and stable (assuming a stationary environment following train-test-deploy). Intel® Saffron™ AML Advisor, on the other hand, is more appropriate for individual and dynamic patterns, especially those involving deceptive behavior.

A simple example addresses the high-risk customer set of non-governmental organizations and charities. While these entities are at risk for both terrorist financing and as financial conduits for proceeds of crime, no bank wants to refuse these organizations as a group. One way to identify potential nefarious activity by these organizations is through looking at the relationship between activities of the entity itself versus the individual actors it is connected to. To write a traditional model-based rule set to monitor for anomalies in these connections would be tremendously complex and require a substantial consistent tuning effort. Intel® Saffron™ AML Advisor can rapidly identify these anomalous connections without the need for consistent tuning—its associative memory approach will automatically adapt to changing patterns and identify behavior as suspicious without the need to adjust thresholds.

Solution Architecture

Intel® Saffron™ AML Advisor federates and unifies disparate data types, structured or unstructured, regardless of their source.

In the Associative Reasoning layer (see Figure 2), the product establishes connections and similarities, and it identifies anomalies across data sets using its core cognitive algorithms.

Through FSI-specific algorithms, Intel® Saffron™ AML Advisor discovers patterns and trends that are used in the investigation to highlight scores and signatures. This enables the analysis, detection, and classification of previously unseen money laundering patterns.

To make Intel® Saffron™ AML Advisor's insight actionable, a unified Presentation layer provides analysts, investigators, and auditors with a clear view of findings and recommended actions along with their supporting evidence.

For seamless integration into existing workflows, Saffron data can be consumed by third-party data visualization systems and other applications.

The software stack runs on a high-performance Intel® architecture server platform, including the Intel® Xeon® processors, Intel® Solid State Drives (Intel® SSDs), and Intel® Ethernet adapters. Other Intel technology integrates into the solution stack to further optimize performance and security, including the Intel® Scalable System Framework (Intel® SSF).

Intel® Saffron™ AML Advisor can integrate into an on-premises infrastructure or be delivered as a cloud-based solution.
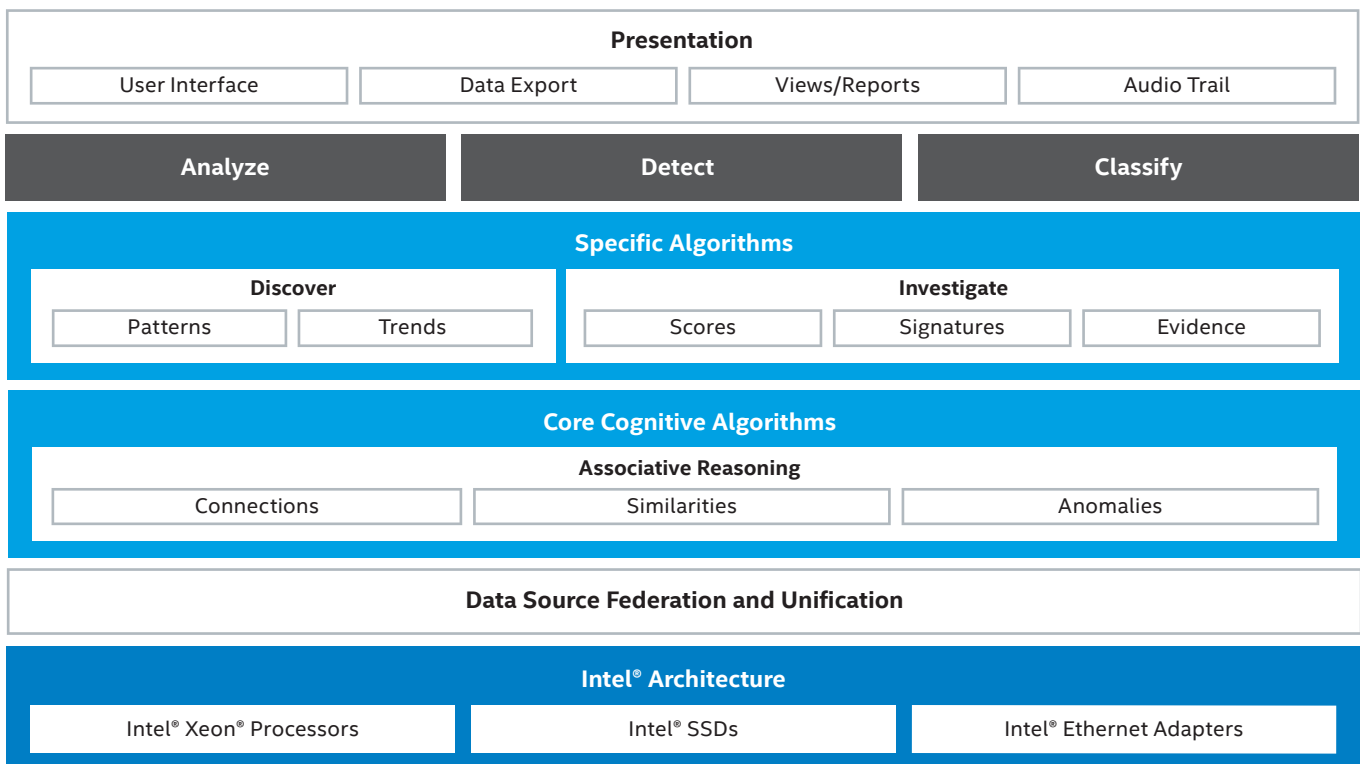

Figure 2. Intel® Saffron™ AML Advisor solution architecture.

Conclusion

Artificial Intelligence technology is transforming the way business is done and how enterprises create and deliver value to their customers. The financial services industry has always been at the forefront of adopting and implementing state-of-the-art technologies. Intel® Saffron™ AML Advisor is the next wave of artificial intelligence, offering a new approach to surfacing actionable insight through associative memory AI. Inspired by human intelligence, it transforms data into knowledge, giving financial institutions the insight to understand, the confidence to act, and the evidence to explain the decisions used to tackle their biggest challenges.

Find the solution that is right for your organization. Contact your Intel representative or visit **intel.com/FSI**.

Learn More

You may also find the following resources useful:
- Saffron Technology Website
- Intel® Artificial Intelligence
- Intel® Scalable System Framework

[1] 1United Nations Office on Drugs and Crime, unodc.org/unodc/en/money-laundering/globalization.html

[2] Javelin Strategy & Research, 2017 Identity Fraud Study, javelinstrategy.com/press-release/identity-fraud-hits-record-high-154-million-us-victims-2016-16-percent-according-new