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## 2021 IMPACT INNOVATION AWARD IN AML

SYMPHONY AYASDIAI

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## IMPACT BRIEF

## SYMPHONY AYASDI AI

Founded in 2008, Symphony Ayasdi AI, a Symphony AI portfolio company, empowers financial institutions (FIs) and other businesses to construct more complete pictures of customer, third-party, and user behavior, and, through predictive insights, discover financial crime risk, often opaque and hidden. Backed by a US\$1 billion commitment from Dr. Romesh Wadhvani, a successful entrepreneur and philanthropist, Symphony AI has been building one of the leading global artificial intelligence (AI) companies, with over 2,200 talented leaders, data scientists, and other professionals.

As the byproduct of years of research and development, Symphony Ayasdi AI's next-generation anti-money laundering (AML) platform, SensaAML, is a powerful financial crime risk discovery engine that can maximize legacy AML transaction monitoring systems and their underlying data. SensaAML leverages unique combinations of topological data analysis, time series, and leading analytical innovations for smarter financial crime detection, elevated risk prevention, and optimized effectiveness. SensaAML can power new anomaly recognition and deliver system transparency and explainability while slashing false-positive alerts and cutting operational costs.

### THE AML MARKET: CHALLENGES AND NEED

For many FIs, efforts to build and sustain effective AML technology frameworks have been hamstrung by a demanding business, operational, and regulatory landscape (Table A).

TABLE A: AML MARKET CHALLENGES

AML CHALLENGE	IMPACT
<p>Recognizing that more needs to be done to counter financial crime, regulators are increasing their expectations and pressure on the private sector. For example, in the U.S., the Anti-Money Laundering Act of 2020 (AMLA) was passed in December 2020.</p>	<p>Many current AML practices and technologies are becoming outdated. FIs must modernize their AML control frameworks to deliver more actionable intelligence to law enforcement. As the AMLA reforms underscore, taking a risk-based approach and adopting innovation to financial crime prevention and detection is becoming increasingly critical.</p>

AML CHALLENGE	IMPACT
<p>Emerging and increasingly sophisticated criminally risky behaviors go undetected by current legacy AML transaction monitoring systems.</p>	<p>Identifying hidden and obscure criminal attacks and behaviors continues to test financial organizations. Criminals, terrorists, and fraudsters are as sophisticated as the institutions they target and abuse. To stay one step ahead of bad actors, financial organizations must embrace cutting-edge analytical tools.</p>
<p>Legacy transaction monitoring systems often generate excessive false-positive alerts, leading to high operational costs and wasted investigative effort.</p>	<p>Using static rules and scenarios to analyze customer behavior and monitor and detect financial crime is becoming increasingly impractical, unproductive, and dated.</p>
<p>The COVID-19 pandemic accelerated the digital transformation already well underway within the financial services industry. Yet many AML compliance frameworks are ill-prepared to adapt to the increasingly evolving landscape and changing consumer behaviors.</p>	<p>As customer behavior evolves and more customer data becomes available, AML functions demand innovative tools and techniques to better understand and utilize the available information. Smarter technologies enable elevated risk intelligence and, as a result, more informed decision-making on fraud and financial crime detection.</p>

Source: Symphony AyasdiAI and Aite-Novarica Group, June to August 2021

With the goal of empowering more accurate utilization of institutional data and augmented risk understandings, the SensaAML solution looks to disrupt the AML technology market by integrating cutting-edge AI and graph machine learning technologies. SensaAML can detect opaque, complex, and frequently hidden criminal behaviors often indistinguishable from normal customer activity and patterns. Moreover, SensaAML can deliver this elevated risk intelligence using the same data in existing legacy AML transaction monitoring systems. As the COVID-19 pandemic put the financial services industry into an unprecedented state of uncertainty, Symphony AyasdiAI went to work with clients to tackle the changing landscape of financial customers' behaviors and transactions.

## INNOVATION: SYMPHONY AYASDIAI'S SENSAML

The SensaAML platform is designed to deliver transformative information yield, transparency, and explainability in a simple-to-understand and easy-to-use environment that seamlessly integrates with current processes and workflows (Figure 1). By tracking evolving customer behavior as intuitively and effectively as possible, SensaAML enables financial organizations to be more proactive and targeted in how they spot and triage current and emerging financial crime threats. Additionally, SensaAML can facilitate an organization's transition from a rules-based financial crime monitoring approach to a modernized paradigm of continuous learning and optimization. This can be achieved in parallel with existing AML transaction monitoring frameworks or implemented as a full replacement solution.

FIGURE 1: SENSAML'S VALUE PROPOSITION

Ayasdi Models				
Risk similarity	Hotspot identification	Change in behavior	Anomaly detection	Expert rules
<ul style="list-style-type: none"> <li>Model looks at prior L3 reviews and SAR filings to determine risky behavioral profiles based on current behaviors</li> </ul>	<ul style="list-style-type: none"> <li>Models utilize recursive segmentation to understand risk and alert on entities similar in behavior to known risky entities</li> </ul>	<ul style="list-style-type: none"> <li>Model looks for changes in customer activity that moves the behavioral profile into more risky segments and indicates suspicious behaviors</li> </ul>	<ul style="list-style-type: none"> <li>Detection focuses on finding anomalous behavior among entities that have been grouped together based on similarity</li> </ul>	<ul style="list-style-type: none"> <li>Rules engine is flexible in providing detailed, complex heuristics that can be combined to detect known risk typologies</li> </ul>
Supervised	Semi-supervised	Unsupervised		Manual
<ul style="list-style-type: none"> <li>Previous suspicious behaviors</li> <li>Mingling</li> <li>Cash couriers</li> </ul>	<ul style="list-style-type: none"> <li>Unknown typologies</li> <li>Complex structures</li> <li>TBML</li> </ul>	<ul style="list-style-type: none"> <li>Breakout behaviors</li> <li>Ponzi/pyramid schemes</li> <li>Complex structures</li> </ul>	<ul style="list-style-type: none"> <li>Large cash amounts</li> <li>Complex structures</li> <li>Smurfing</li> </ul>	<ul style="list-style-type: none"> <li>Syndicated behavior</li> <li>Unusual customer behavior</li> <li>Known typologies</li> </ul>

Source: Symphony AyasdiAI

Symphony AyasdiAI developed the SensaAML platform on several key features and functionalities as described below:

- Anomaly detection:** SensaAML's unsupervised learning techniques scrutinize over 500 behavioral features to identify clusters of customers who share similar behavioral, transactional, and other characteristics. Within these clusters, the SensaAML platform spots those customers with unusual activity and risk-scores

them against other parties within their specific behavioral group. Identified anomalous behavior supports discovery of previously uncovered risks.

- Behavioral changes:** As customers transact and interact with their accounts and other parties, behavioral patterns emerge. By understanding the underlying patterns of all customers, SensaAML can recognize when significant activity changes occur. When customer patterns deviate from their peer group, SensaAML moves those entities into higher-risk behavioral segments, and by continuously monitoring for these behavioral changes, SensaAML triggers alerts on those identified deviations from baseline activity.
- Similarity to escalated investigations and suspicious activity report (SAR) filings:** Suspicious behavior can be mapped out into known and unknown typologies. SensaAML’s supervised learning models focus on finding the customer behaviors that are most similar to those activities typically associated with escalated AML investigations and SAR filings.
- Tune and prioritize:** SensaAML’s out-of-the-box detection models enhance coverage against known and unknown risks. In addition, SensaAML’s advanced scoring and orchestration functionalities can support financial crime framework centralization and enhancement.

To date, Symphony AyasdiAI has been awarded 44 patents based upon three key innovations (Table B).

TABLE B: SENSEAAML KEY INNOVATIONS

INNOVATION	DESCRIPTION
<p><b>Agnostic data ingestion and analysis</b></p>	<p>SensaAML’s unique unsupervised machine learning models elevate feature generation across structured and unstructured data sets. Without the imposition of an abstract and alien data model, SensaAML can ingest large amounts of heterogeneous and distributed data sources and automatically create new relationships, activities, and behaviors. On typical deployments, SensaAML can double the informational yield from data compared to many other solutions, such as rules-based or machine learning.</p>

INNOVATION	DESCRIPTION
Orchestrated machine learning	To maximize transparency as well as the discovery of the underlying characteristics of complex financial crime activity, SensaAML leverages topological data analysis, graph machine learning, inference, and behavior vector algorithms, and combines them into a single orchestrated financial crime monitoring ecosystem.
Event-driven architecture	Built upon an event-driven architecture, SensaAML integrates the ability to process data when events change thanks to its agile model, which grows with the client's data. As a result, SensaAML can extract and analyze data to baseline normative behavior while developing and maintaining up-to-date risk maps based on customer financial transaction relationships.

Source: Symphony AyasdiAI and Aite-Novarica Group, June to August 2021

## SOLUTION IMPLEMENTATION: HOW SENSAML WORKS

SensaAML was designed with the awareness that FIs have invested heavily in existing legacy AML solutions and they are often reluctant to replace those platforms. As such, SensaAML can sit alongside existing AML transaction monitoring systems, case management platforms, and other supporting technologies and operate in parallel. SensaAML can also operate as a fully functional transaction monitoring system, with both AI-native and rules-based detection schemes. To support this agility, flexibility, and scalability, SensaAML is built on five fundamental tenets:

- **Cloud-native:** SensaAML is cloud-agnostic. As such, it can be deployed across any cloud environment, taking advantage of cloud-based resources or a client's on-premises data center.
- **Targeted AI-approach:** With 44 patents and its unique blend of supervised, semi-supervised, and unsupervised machine learning techniques, SensaAML embeds cutting-edge data science approaches in countering fraud and financial crime.
- **Open-source first:** SensaAML takes advantage of many common open-source components to enable a robust and secure framework.
- **Microservices:** SensaAML components are discrete services that implement specific business functions and use cases. Services communicate through an opinionated API and service portal.

- Orchestration:** SensaAML is a Kubernetes-based platform that delivers a software-defined environment, abstracting function and system design from the hardware and environment. Lower-level system functions are governed by Kubernetes automatically, with no additional development or operation work needed.

SensaAML can be implemented and deployed within three months with minimal customizations. Supporting a common application software framework enables faster deployments, utilizing microservices that can be used and operated independently. In addition, a dynamic data model enables accelerated extraction and loading of required client data without laborious data homogenization.

### KEY BENEFITS: QUANTITATIVE AND QUALITATIVE RESULTS

By integrating leading algorithms based on data science and business requirements, SensaAML can deliver significant benefits, as highlighted in Table C.

TABLE C: SENSAAAML'S KEY BENEFITS

KEY BENEFIT	DESCRIPTION
Intelligent customer risk scoring	Combining supervised, unsupervised, and semi-supervised machine learning models, SensaAML can understand complex customer behaviors across hundreds of characteristics and build enterprise customer behavioral maps. These behavioral profiles uplift financial crime risk identification and detection.
Accelerated risk detection	SensaAML's behavioral model approach can significantly improve data yield, enabling FIs to identify suspicious behavior up to 12 months earlier than their existing legacy systems.
Elevated fidelity	SensaAML can drive up institutional confidence by reducing false-positive alerts while increasing the discovery of new and emerging financial crime events, often undetected by current AML transaction monitoring processes. Symphony AyasdiAI cited that SensaAML can eliminate more than 60% of Level 1 and Level 2 alerts while increasing recognition rates of higher-risk activity.

KEY BENEFIT	DESCRIPTION
Operational efficiency	By distinguishing between low- and high-risk customer behavior, SensaAML's dynamic risk profiles can drive down false-positive alerts, improving operational efficiency. Symphony AyasdiAI noted some clients are seeing a 500% increase in financial intelligence unit productivity.
Speed to deployment	With its cloud-native, microservices design, SensaAML can be deployed quickly, accelerating an organization's positive return on investment (ROI). Symphony AyasdiAI reported some clients experienced a positive ROI within three months.
Phased approach to AML transaction monitoring system augmentation and replacement	For the many financial organizations for which a "rip-and-replace" strategy is not viable, SensaAML can seamlessly work alongside existing legacy AML transaction monitoring systems. While addressing immediate AML challenges and needs, the integration of SensaAML can facilitate a long-term transition to a more modern AML transaction monitoring approach.

Source: Symphony AyasdiAI and Aite-Novarica Group, June to August 2021

In a recent comparative test against another AML transaction monitoring system using similar customer banking data, Symphony AyasdiAI revealed that SensaAML uncovered hidden risk at a 93% hit rate of previously uninvestigated entities. In addition, SensaAML reduced false positives by 60%, increased risk detection by 120%, and accelerated the speed of risk detection by 40%.

## FUTURE ROADMAP

Over the next 12 to 24 months, Symphony AyasdiAI aims to cement SensaAML's position as a leading AI-led AML transaction monitoring solution while expanding its capabilities into fraud and other related financial crime use cases. In addition, Symphony AyasdiAI is making the following other investments:

- Modernizing SensaAML's user interface design
- Continuously improving SensaAML's detection models through its unique blend of unsupervised, semi-supervised, and supervised machine learning approaches
- Extending its data management with AI-assisted data mapping and enhanced entity resolution

- Building out connectors for key external data APIs for additional entity risk assessment

## AITE-NOVARICA GROUP'S TAKE

With the increasing sophistication of criminal actors, regulators recognize that current legacy AML transaction monitoring systems may no longer be capable of holistic risk detection. Further, FIs recognize that they must find ways to reduce the volume of false positives churned out of their existing AML systems. Aiming to empower AML functions with modern tools and techniques to elevate their understanding and use of data and make smarter decisions, Symphony AyasdiAI built SensaAML as a complete financial crime solution. It delivers automation and intelligence in the areas where FIs need it the most. The following key aspects of SensaAML have impressed Aite-Novarica Group:

- Appreciating that many FIs have made substantial monetary and resource commitments to legacy AML technologies, SensaAML is built as a platform that can work in parallel with existing applications and processes as well as operate as a stand-alone AML transaction monitoring platform. For example, it can augment current rules and thresholds while harvesting additional risk insights from better data mapping and discovery.
- A dynamic data model allows SensaAML to ingest and use the same data used by legacy AML transaction monitoring systems. As such, SensaAML clients can leverage their data in its current format without the need for the cumbersome data homogenization that many other vendor implementations demand.
- Leveraging cutting-edge artificial intelligence and graph machine learning technology, SensaAML can more accurately identify complex customer behavior as well as discover hidden and obscure financial crime risks and anomalies.
- More precise financial crime recognition can eliminate significant percentages of false positives and deprioritize other alerts identified as lower risk.
- A cloud-native, microservices, and API-oriented approach enables an agile design that facilitates system integrations and delivers faster and more seamless implementations while accelerating the time to achieve a positive ROI.
- SensaAML is completely transparent and auditable, so it does not hinder any regulatory compliance requirements.

## IMPACT INNOVATION AWARDS IN FRAUD & AML

The world is changing rapidly, and sustaining effective financial crime risk management has become extremely challenging and complex. The breadth and capabilities of fraud and AML technology solutions must now go beyond traditional offerings to address new market forces, fight financial crime, and achieve regulatory compliance while elevating the customer experience and operational efficiency.

Aite-Novarica Group’s inaugural Impact Innovation Awards in Fraud & AML are designed to recognize and celebrate innovations that are disrupting financial crime. Award recipients are leading the industry by identifying and implementing new products, capabilities, or levels of automation and effectiveness that bring our financial services industry one step closer to next-generation fraud and AML innovation. They are the FIs and technology providers, regardless of size or region, that others will follow.

### QUALIFICATION AND EVALUATION METHODOLOGY

Aite-Novarica Group solicited nominations for its 2021 Fraud & AML Impact Innovation Awards from May to the end of June 2021. All nominated initiatives were required to be in production and must have been implemented within the last two years.

Analysts from Aite-Novarica Group’s Fraud & AML practice reviewed all AML nominations and narrowed the field to the top submissions. Along with Aite-Novarica Group Fraud & AML analysts, an external panel of subject matter experts and industry thought leaders determined the top three overall AML innovation winners. Each AML nomination was evaluated on seven individual criteria (Figure 2).

FIGURE 2: IMPACT INNOVATION AWARD EVALUATION CRITERIA

Impact Innovation Award Evaluation Criteria			
Level of innovation and competitive advantage	Market needs assessment	Impact on customer experience and end-user experience	Impact on operational efficiency
Financial crime risk detection and mitigation	Level of scalability across customer base		Future roadmap assessment

Source: Aite-Novarica Group

## ABOUT AITE-NOVARICA GROUP

Aite-Novarica Group is an advisory firm providing mission-critical insights on technology, regulations, strategy, and operations to hundreds of banks, insurers, payments providers, and investment firms—as well as the technology and service providers that support them. Comprising former senior technology, strategy, and operations executives as well as experienced researchers and consultants, our experts provide actionable advice to our client base, leveraging deep insights developed via our extensive network of clients and other industry contacts.

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[AI-Enabled Anti-Money Laundering: From Theory to Reality](#), July 2020

[Key Trends Driving AML Compliance Transformation in 2021 and Beyond](#), December 2020

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