

ORACLE

A Modern Anti-Money Laundering Program: What It Is and What It Does

A guide for financial institutions



Table of Contents



Introduction

Financial crimes, specifically money-laundering schemes, grow unchecked in both complexity and volume. And, the cost of these crimes is broad and deep, encompassing and incalculable human and environmental toll. Lives and communities are destroyed by terrorism, human and drug trafficking, as well as illicit wildlife trade. It also has a steep economic cost, with money laundering activity accounting for **2 percent to 5 percent of global GDP**.

At the same time, financial services organizations face growing risk. Regulators levied more than **\$8 billion in fines** in 2019, nearly double 2018 penalties, and the trend continues.

As the threat landscape changes continuously, it's more important than ever that financial institutions elevate their defensive posture to match the increasingly perilous terrain. In fact, this is precisely the time that financial

institutions should be focused on modernizing their anti-money laundering (AML) programs to bolster their position today and into the future.

In December 2018, U.S. financial regulators encouraged institutions to consider, evaluate, and, where appropriate, responsibly implement innovative approaches to meet their Bank Secrecy Act/AML compliance obligations, in order to further strengthen the financial system against illicit financial activity. This encouragement feels more timely now as Chief Compliance Officers (CCOs) are called not only to address ongoing pressures from criminals, customers, and regulators, but also to optimize investment and manage costs in a challenging economic environment.

For CCOs looking to boost program effectiveness and efficiency to navigate these challenges, it's the perfect time to begin the journey to AML program modernization.



Modernize to Meet New AML Requirements

Expanding Regulatory Oversight:

United States

The U.S. Treasury's **2020 National Strategy for Combating Terrorist and Other Illicit Financing** looks to remove AML program exemptions for banks that lack a federal functional regulator, such as private banks and credit unions. It also calls for expanding the AML regulatory framework to cover all types of digital asset transactions and lowers the threshold for customer identification of cross-border wires to better align with illicit finance risk and international standards.

Regulators, lawmakers, and banking and corporate transparency groups are pushing for inclusion of the Anti-Money Laundering Act (AMLA) of 2020 in the National Defense Authorization Act (NDAA) of 2021.

European Union

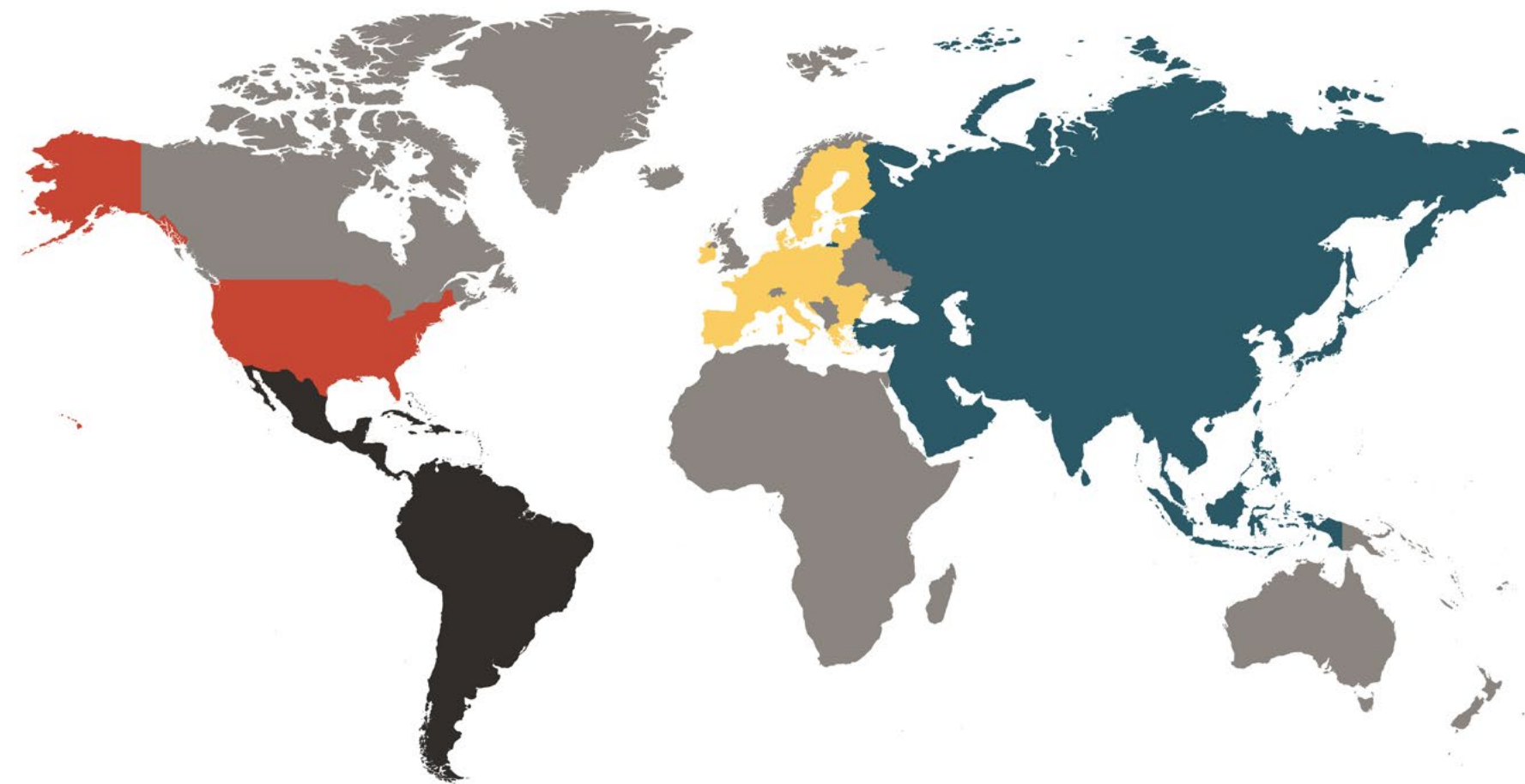
The **6th Anti-Money Laundering Directive** (6AMLD) takes effect in December 2020—seeking to bring much-needed clarity to the definition of money laundering and penalties for those committing it.

Asia

Japan's Financial Services Agency has established a new office focused on **AML/CTF policy**. The move is intended to enhance control over the risk of money laundering and terrorist financing, in addition to establishing a more effective system to combat these crimes in the Japanese financial industry.

Latin America

In January 2020, the Central Bank of Brazil introduced new requirements aimed at improving the efficiency and effectiveness of AML and counter-terrorist financing (CFT) procedures. The new directive calls for increased adoption of a risk-based approach to AML/CFT and expanded customer verification requirements.



The AML Landscape—Rocky and Risky

Banks have long grappled with extreme complexity, disparity, and redundancy of mission-critical systems across their enterprises. Their end-to-end AML environments are no exception.

For example, in the transaction monitoring function and beyond, solutions do not support sufficient logic and flexibility in solutions, leading to high numbers of false positives. On the investigative front, solutions are disparate and data is isolated—limiting transparency, insight, and prompt action. These unfortunate realities contribute to higher compliance costs, sub-optimal outcomes, and elevated risk across the AML compliance process.

Current Challenges Across the AML Program

GROUP	BUSINESS	AML/ RISK ANALYTICS	AML OPERATIONS	FINANCIAL INVESTIGATIVE UNIT	AML OPERATIONS	
AML PROGRAM STAGE	CUSTOMER ONBOARDING	AML TRANSACTION MONITORING	CASE MANAGEMENT	INVESTIGATION	REGULATORY REPORTING	MANAGEMENT REPORTING
CURRENT CHALLENGES	High false positives, due to outdated tools and models		Labor-intensive due to high volume of false positives	Manual data collection due to data in multiple systems	Manual creation of reports	
	Incomplete data/Lack of holistic entity view				Lack of integration with case management	Data in multiple systems
	Data in multiple systems		Large case workload	No holistic entity view, due to lack of single source of information and lack visualization tools		
	Lengthy onboarding	Incomplete monitoring coverage	Large backlog			
	Poor customer experience	Inefficient and expensive model simulation		Manual case narratives		
			Inefficient			
			Expensive			
	Lack of common data model					
	Lack of scalability					

Impact of Relying On Legacy Systems

The Risk Is Real

Disparate legacy AML systems and processes:



Lack the agility needed to adapt readily to ever-changing schemes and regulatory requirements. Most legacy environments contain rules-based systems trained on historical data that do not readily accommodate the changing landscape.



Are increasingly expensive to maintain—in the short and long term. Inflexible legacy systems cannot keep pace with new challenges, technologies, threats, and regulations. As a result, firms are forced to deploy new point-solution tools and technologies, which they must then integrate to their legacy systems. This drives up costs and complexity.



Drive higher overall program inefficiency due to an elevated need for manual processes and intervention associated with false positives



Increase risk—financial, regulatory, and reputation



Compromise the customer experience due to false positives

By the Numbers:

US banks spend an estimated **\$23.5 billion per year** on AML compliance annually

European banks shoulder a **\$20 billion** burden annually

The **false positive alert rate** is staggering—surpassing 80% or 90% of alerts. — Celent 2019

Resources dedicated to AML compliance at large US banks **increased tenfold** between 2012 and 2017

False Positive Paradox

The high number of false-positive events is one of the most vexing AML program challenges. Event investigation requires significant time, effort, and budget as much of the data aggregation and analysis requires manual intervention. In the interim, transactions can be delayed or halted unnecessarily, leading to customer frustration. Firms struggle with navigating the tradeoff between risk tolerance and the false positive rate.

The high false positive rate is holding back the industry from achieving the true power of automation. If an institution can reduce the false positive rate, it clears the way to widely embrace automation and reap the efficiencies it can deliver.



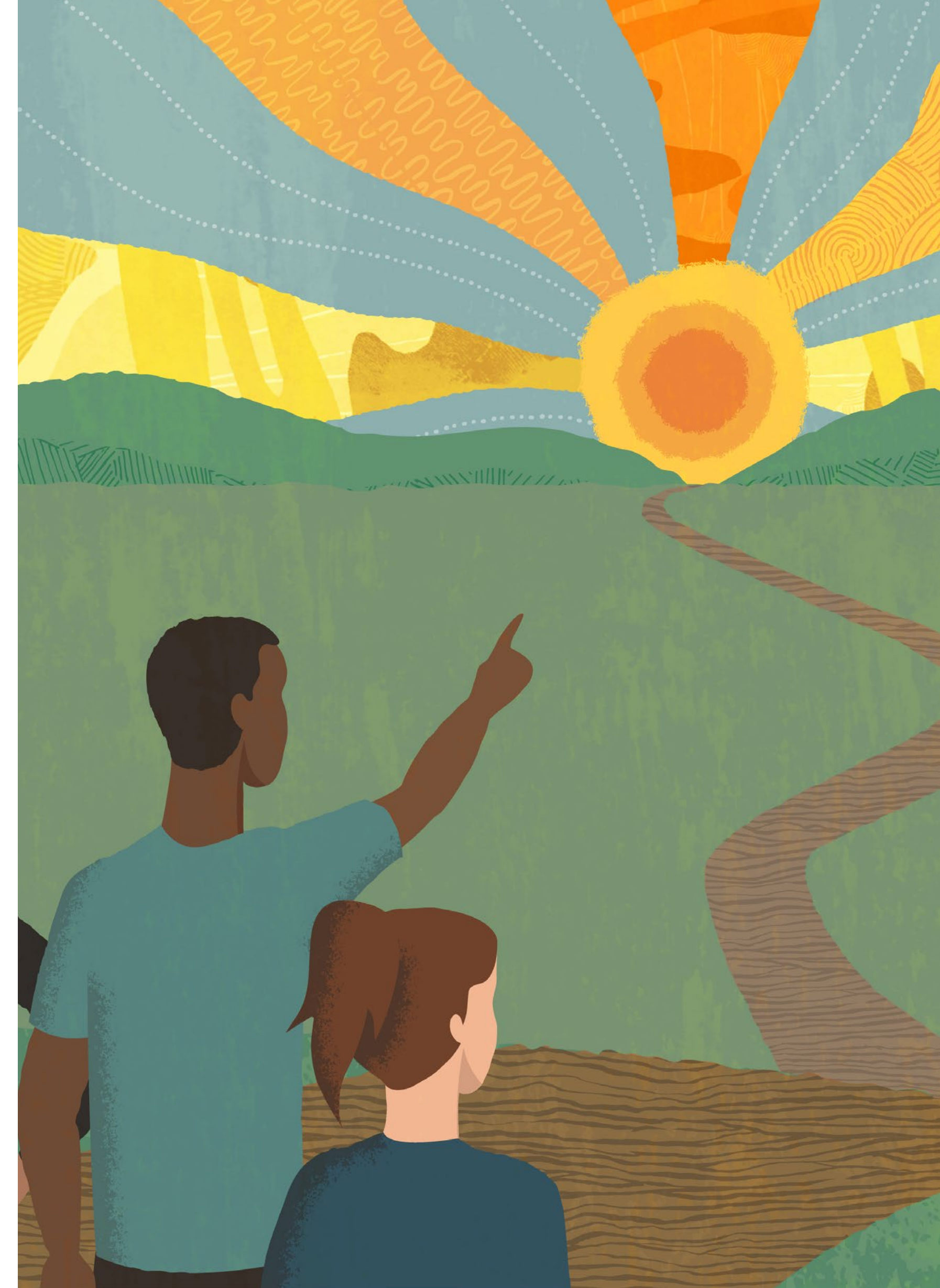
Modernize Today for Brighter Days Ahead

Forward-thinking organizations are embracing a holistic compliance and financial crime-fighting culture that permeates the organization and is not simply siloed in the risk department. They are also embracing next-generation machine learning technologies. A modern approach to AML also asserts that compliance can no longer be viewed simply as a “check-the-box” exercise, but as a business process that delivers real value to the organization and helps to secure its future.

Financial institutions that embrace AML program modernization are well-positioned to gain benefits that extend well beyond compliance.

These include:

- Protecting customers, the business, and the financial system by boosting AML effectiveness
- Elevating AML program efficiency, allowing financial institutions to optimize the impact of resources allocated to this critical function
- Ensuring continued compliance over the long term, even as requirements change
- Equipping CCOs to support business growth by boosting AML efficiency and accuracy, improving the customer experience through a better Know Your Customer (KYC) experience, and surfacing customer insights that other departments can leverage to drive growth
- Accelerating the organization’s enterprise data strategy, reducing data provisioning time and costs while increasing quality

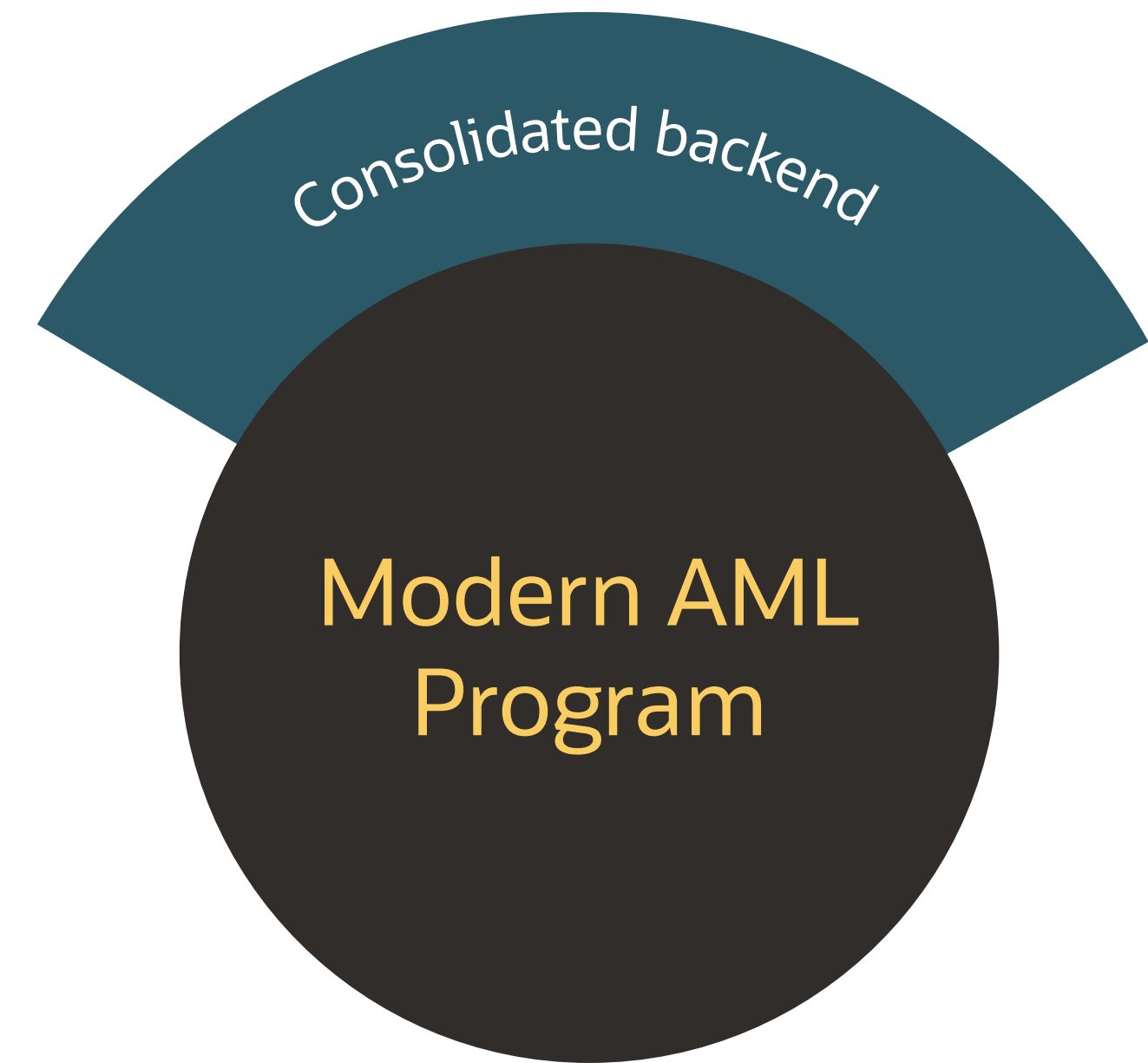


Anatomy of a Modern AML Program

A Consolidated Backend

The first step in the journey to AML program modernization is to consolidate the backend, and move from disparate systems to a unified platform for KYC/Customer Due Diligence (CDD), monitoring, detection, investigation, and reporting.

A unified platform provides several benefits. First, it improves decision accuracy because it allows AML investigators and analysts to evaluate the risk of each event holistically, regardless of where it comes from. Second, a standardized, unified platform helps financial institutions control costs by providing operational efficiencies, reducing the training costs required to keep staff up-to-date on multiple systems, and making daily workflows smoother. Finally, a unified platform can give CCOs a view of end-to-end compliance operations, which they can measure and manage within a single dashboard.



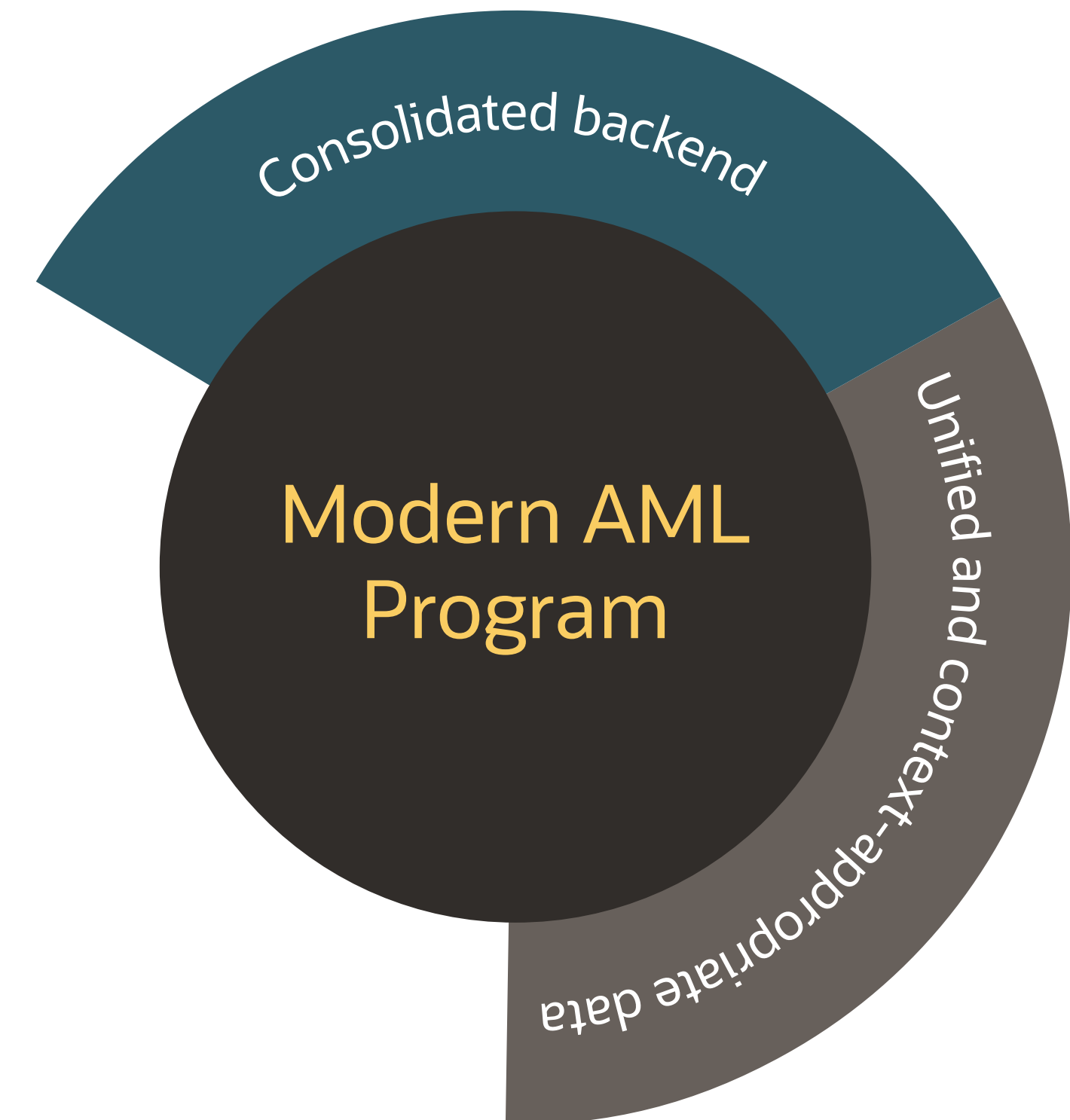
Anatomy of a Modern AML Program

Unified and Context-appropriate Data

A modern AML program requires more than a unified platform; it also needs unified and context-appropriate data. This can be achieved by having a common data foundation that can take input from any transaction system and any data source, including third-party data feeds and fragmented data. A common data foundation serves as a single source of truth that facilitates quality control and enables consistency, transparency, and auditability.

To truly modernize the AML process, data must be context-appropriate. It's not enough to simply aggregate information on a customer origination. To truly bring new levels of effectiveness to the AML process, financial institutions must also match sentiment to that data, extending well beyond fuzzy matching.

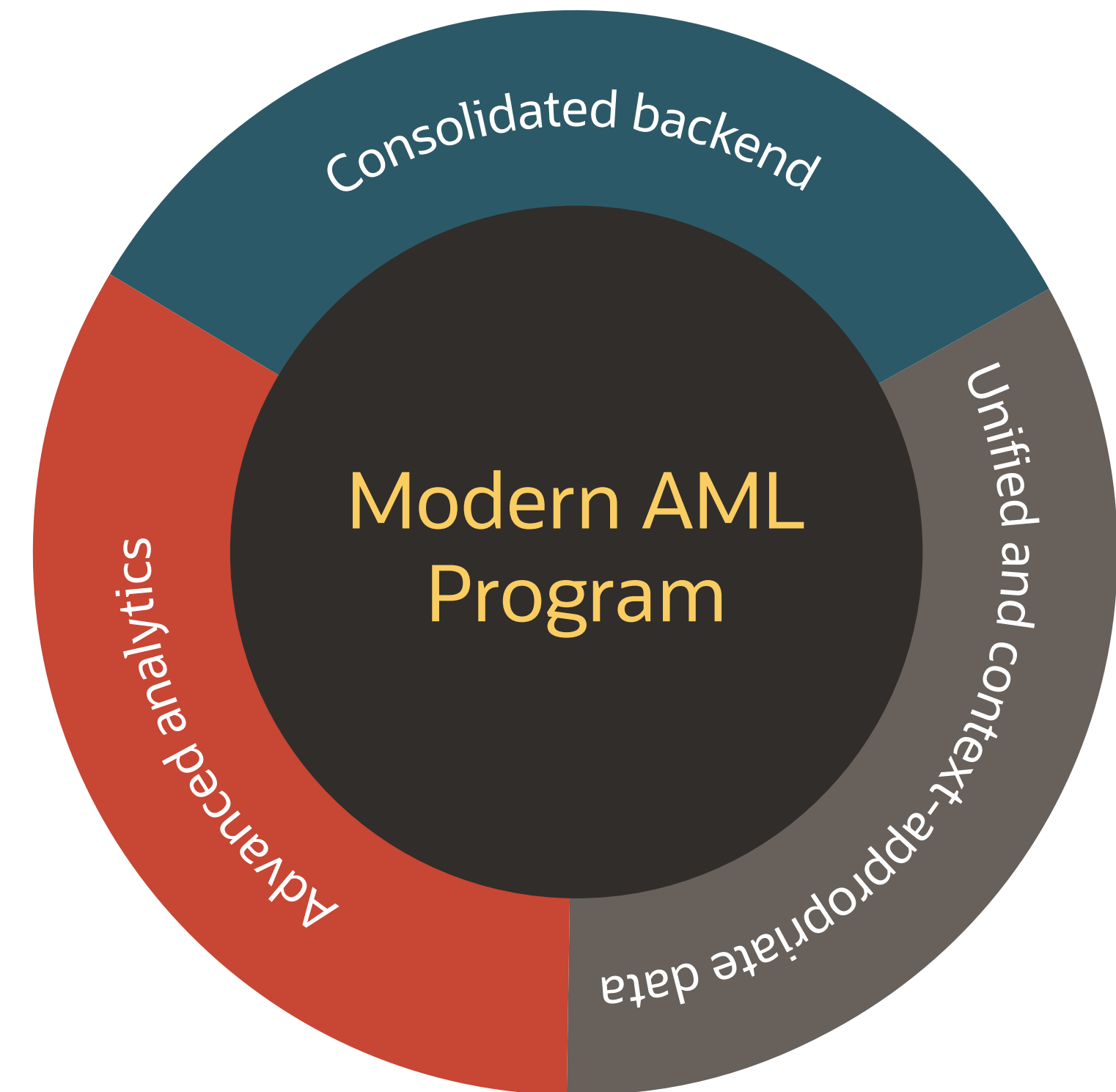
With unified and context-appropriate data, financial institutions can source data once and use it for multiple use cases, instead of performing extensive ETL cycles to make data available in the right location at the right time. Importantly, unified data makes it easy to leverage the detection data pipeline for discovery and modeling of new criminal patterns, and for advanced analytics applications that enhance monitoring, detection, and investigation results.



Anatomy of a Modern AML Program

Advanced Analytics

While many financial institutions are excited about the potential of advanced analytics to dramatically improve the effectiveness and efficiency of their AML programs, they often wonder where to start. Fortunately, advanced analytics can be brought in gradually. Each financial institution can take the path and pace that works for them based on their needs and their data pipeline.



Advanced Analytics: A Deeper Look

Advanced analytics to consider as part of an AML program modernization initiative include:

Machine Learning to Improve Detection

While traditional rules-based AML scenarios may keep financial institutions technically compliant, they are unable to adapt to the constantly changing patterns of modern financial crimes, elevating risk to the business and its reputation. Machine learning models can improve detection by rapidly adapting to changing patterns. (See Figure 1) To start, financial institutions can run models in parallel with rules-based scenarios and eventually turn off the rules when their regulators are comfortable. Machine learning models can be overlaid on top of rules-based scenarios to detect highly suspicious activity. They can also simplify tuning by replacing multiple rules and eliminating the need to tune multiple parameters in favor of a single probability score.

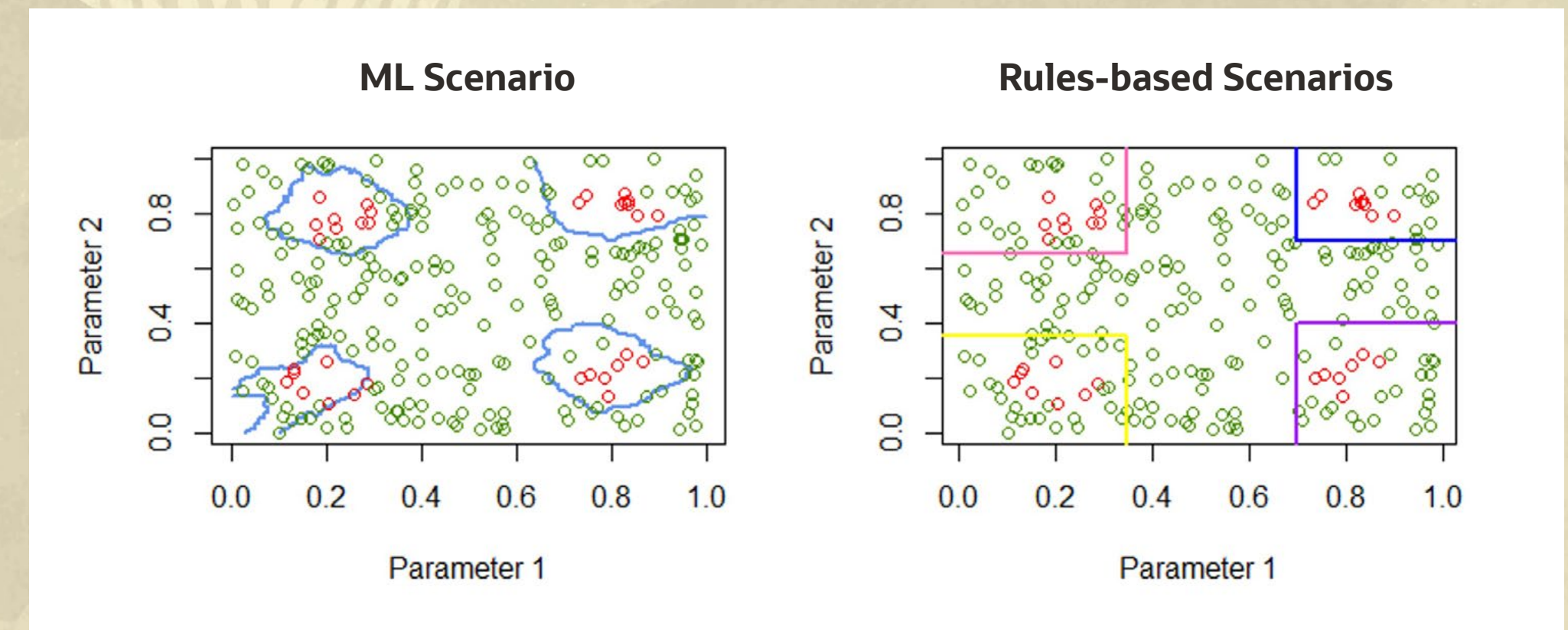


Figure 1. Machine learning models can identify pockets of suspicious behavior more precisely than rules-based scenarios. Rules-based scenarios are constrained by rectangular decision boundaries, while machine learning scenarios can have decision boundaries of any shape. Machine learning models, therefore, can detect pockets of activity more effectively, and can be deployed to monitor activity below the threshold of a rules-based scenario.

Advanced Analytics: A Deeper Look

Graph Analytics for Better Investigations

Efficient investigation of highly organized financial crime requires technologies such as **graph analytics** to succinctly express intricate money movement patterns, detect multi-hop relationships, and identify hubs and spokes of activity. Graph analytics leveraging a single source of data powers investigators with an ability to search customer information from various source systems and allows the linkage of customers, accounts, external entities, transactions, and external data stored in disparate operational silos. A single source also provides a 360-degree view of a customer, foreign body, or account for a holistic view of the case, transactions, and external data of interest. Graph algorithms, such as **connected components** and **shortest path**, can generate automatic linkages. For example, such linkages could be based on customer identification numbers, name-matching, shared phone numbers, tax IDs, and more. Further, investigators can drill down (expand/collapse) on customer information and visualize related parties using graph analytics. (See Figure 2)

Graph analytics can be combined with machine learning to build better cases by correlating red flags and suspicious events from various systems into a single case. This allows investigators to work on comprehensive cases instead of single events, which significantly reduces AML program workload.

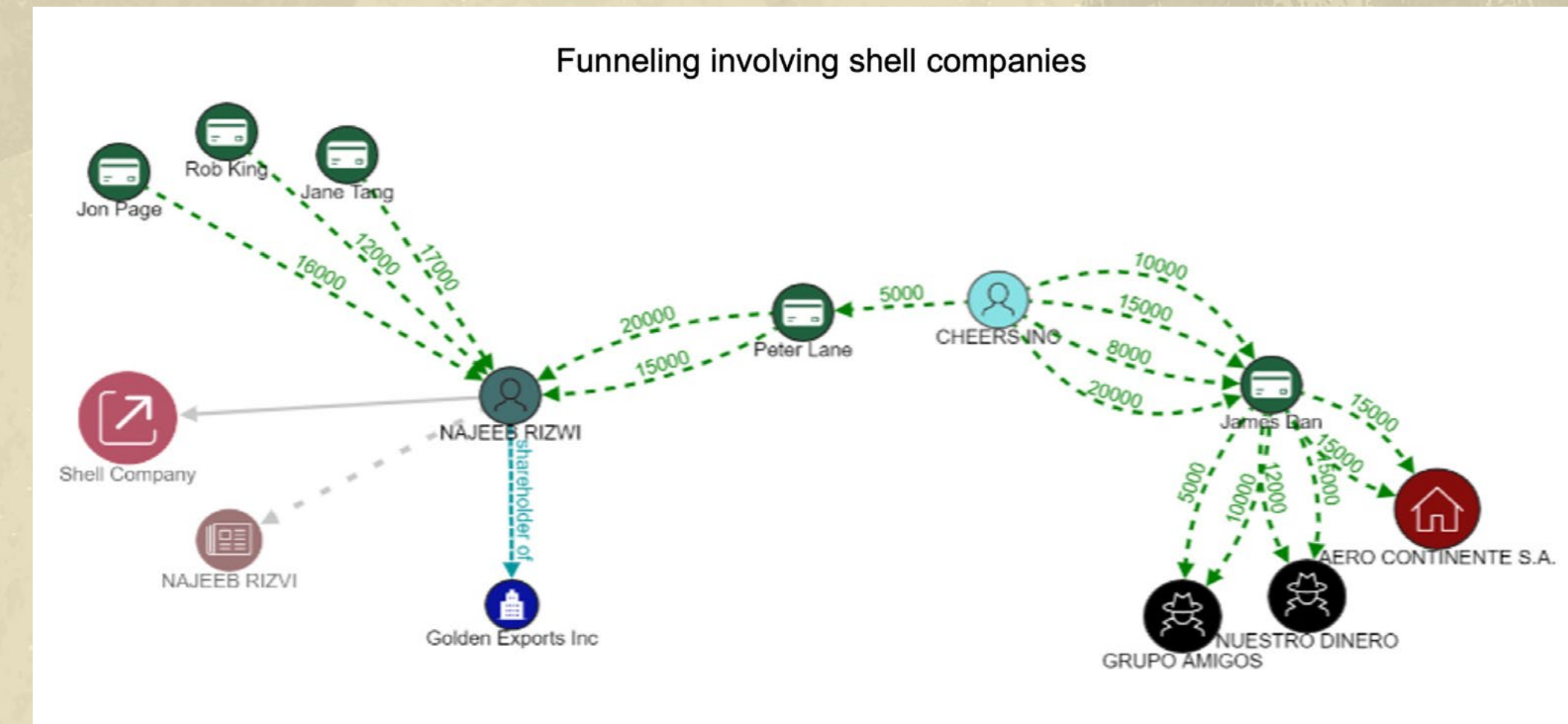


Figure 2. Funneling involving shell companies.

Advanced Analytics: A Deeper Look

Entity Resolution for a 360-degree View

Graph analytics enables entity resolution, which allows institutions to gain a genuine 360-degree picture of their customers and external entities, alike, by identifying different instances of the same entity across data sources.

Deep Learning to Find Patterns

Deep learning in financial crime can be valuable because similar past behaviors can be clusters that can predict new cases. Financial institutions can apply deep learning to graphs to find new graphs that are similar to previously identified graphs of criminal activity. Deep learning on graphs is especially effective because it is not limited to a specific point in time for risk indicators but instead evaluates holistic patterns and networks. (See Figure 3)

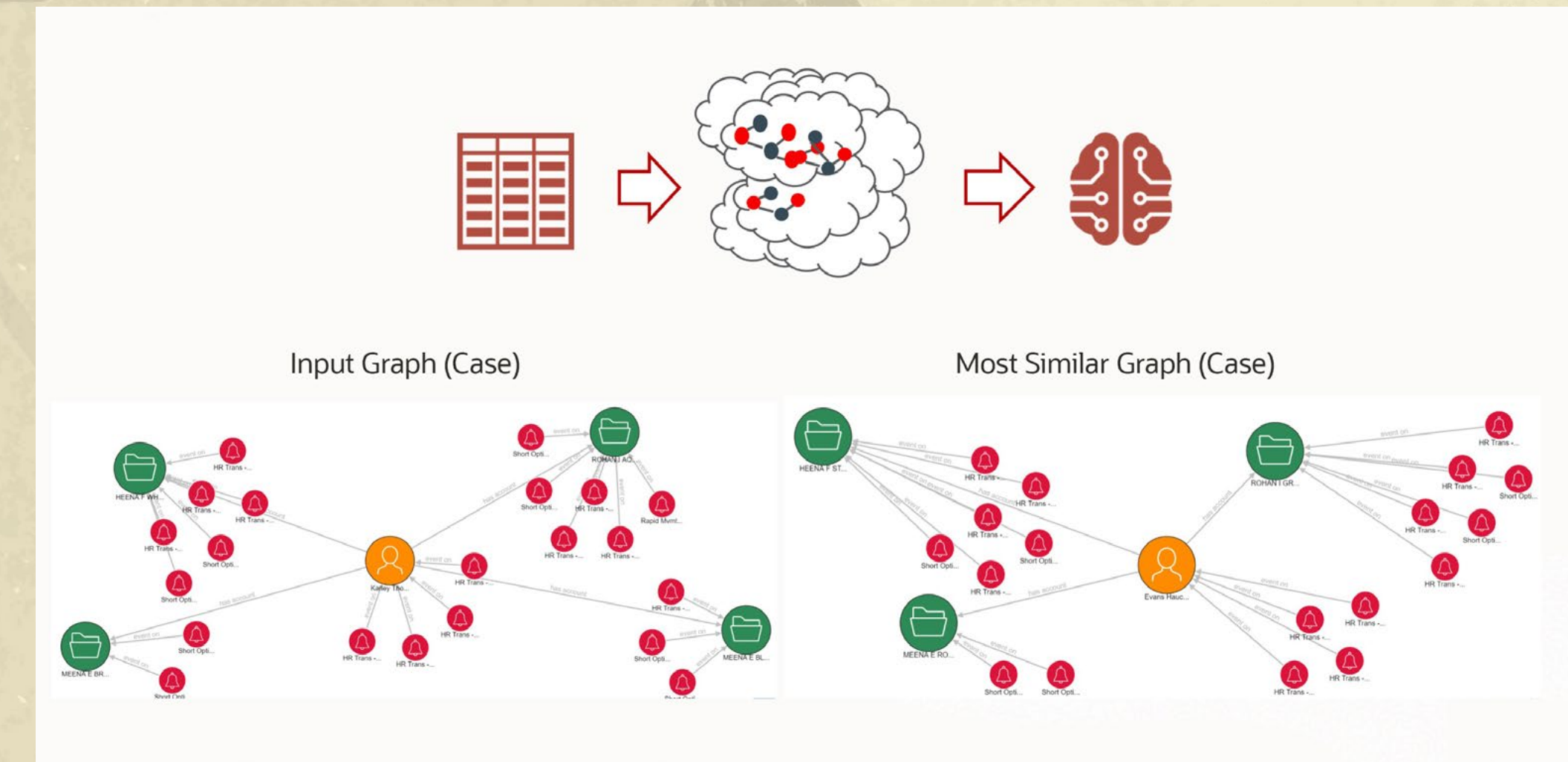


Figure 3. Graph similarity involves determining the degree of similarity between two graphs. Intuitively, the same node in both graphs would be similar if its neighbors are similar (and its connectivity, in terms of edge, to its neighbors is similar). Its neighbors are similar if their neighborhoods are similar, and so on. This intuition guides the possibility of using belief propagation (BP) as a method for measuring graph similarity, precisely because of the nature of the algorithm and its dependence on neighborhood structure.

Advanced Analytics: A Deeper Look

NLP for Automatic Case Narratives

Financial institutions can use natural language processing (NLP) to make graph-based investigations more efficient. NLP can automatically generate case narratives based on what an investigator uncovers in a graph visualization. This eliminates the manual step of writing case narratives, thereby reducing investigation times dramatically and avoiding human errors.

Collective Intelligence and Collective Learning for Recommendations

Financial institutions can use artificial intelligence to learn from previous case decisions about graph networks, and provide recommendations or suggest next steps to investigators. This can help new analysts or investigators learn to identify criminal behavior more quickly.



Operational Considerations

An AML program modernization initiative naturally leads to some operational improvements across the compliance department. Training is easier when staff members work on a single system. A common data foundation means less time is spent on data provisioning. Machine learning models are easily taken into production when advanced analytics is integrated throughout the platform. Some other operational improvements to consider include:

- **Leverage Open-source Technologies**
Advanced analytics requires a set of data science tools, and it's important to select the tools that make it easy for staff to do their best work. Open-source data science languages, technologies, and standards minimize the need to re-train staff and increase productivity. Tools to consider include Apache Zeppelin and Jupyter notebooks, Apache Spark as an analytics engine, and popular data science languages, such as R, Python, SQL, and Scala.
- **Consider Cloud**
Running a modernized AML program on the cloud makes sense for a lot of reasons, especially now that regulators broadly accept cloud for AML programs. It saves significant costs on maintaining data centers, provides scalability on demand, and makes ongoing upgrades easier. Management can be further streamlined by working with an AML vendor that provides both applications and cloud services.



Engineered for Success

Oracle Financial Crime and Compliance Management allows financial institutions to efficiently detect, investigate, and report suspected money laundering and other financial crimes to comply with current and future regulations and guidelines. It provides automated, comprehensive, and consistent surveillance of all accounts, customers, correspondents, and third-parties in transactions across all business lines. Machine learning capabilities, including graphic analytics and NLP, deliver unprecedented insight and efficiency.

The Oracle value proposition:



Unrivalled Data Management

Unite siloed internal data with Oracle Financial Services Data Foundation, for a complete customer view, a streamlined financial crime compliance program, and lower costs

Cut time spent gathering data thanks to robotic process automation

Perform batch and real-time analytics on one platform

Turn compliance data into a competitive advantage by using it for customer analytics



Advanced Analytics

Analyze relationships among entities instead of just the entities themselves with graph analytics

Identify complex money movement patterns, multi-hop relationships, and hubs and spokes of activity

Combine entity resolution and advanced decisioning for better investigations



Powerful Platform

Legacy dates to work begun in 1996 for the National Association of Securities Dealers

Benefit from enterprise-grade, resilient architecture that easily integrates cutting-edge innovations with a comprehensive suite of applications for a streamlined compliance program at scale

Strong Return on Investment



Consider the potential for AML modernization with Oracle Financial Crime and Compliance Management in a Tier 1 financial institution.

AML Function	AML Modeling	Intake & Triage	Enhanced Due Diligence	Financial Investigative Unit
Estimated Efficiency Gain	~15%-20% efficiency gain ~1 hour/day/analyst	Intake: ~10% efficiency gain; ~.8 hours/day/analyst Triage: ~15%-20% efficiency gain; ~1.2-1.8 hours/day/analyst	~10%-20% efficiency gain ~.8-1.6 hours/day/analyst	~10%-20% efficiency gain ~.8-1.6 hours/day/analyst
Benefits Description	<ul style="list-style-type: none">• Reduced time attaching non-standard transactions to alerts• Reduced costs—creating, testing, and operationalizing models	<ul style="list-style-type: none">• Process re-design (auto-assignment functionality) and skill-based structuring of teams• Workflow enhancement• Reduced time to conduct triage via holistic view of customer	<ul style="list-style-type: none">• Process re-design and skill-based structuring of teams• Reduced duplication of effort and manual tracking of cases• Workflow enhancement, including approval workflow	<ul style="list-style-type: none">• Reduced information-gathering time and investigation time• Greater efficiency using an enhanced suspicious transaction alert module, workflow, and auto-assignment• Reduced volume of alerts

Conclusion

Tame the Terrain

Financial institutions face growing financial crime complexity, more rigorous regulatory requirements, and mounting cost pressures. There's never been a more urgent need to begin the AML modernization quest. Next-generation technology, including machine learning, is the backbone of AML program modernization. It must be coupled, however, with unrivaled data management capabilities and an enterprise-grade architecture that readily supports innovation for a streamlined compliance program at scale.

While the necessary components may be similar, the journey to AML program modernization will look different for each financial institution. It may begin with solving for a specific, immediate business need. It could, instead, involve a sequential, multi-phased approach. Or, it might be a comprehensive multi-year transformation. Whatever path is best for you, it's important to begin with a thorough assessment of your current state and business needs, and then set clear objectives and outcome metrics to maximize the impact of your investment. Whatever path you take, Oracle can help you get there.

Start your journey today at www.oracle.com/aml.



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