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Building an AML Compliance Laboratory

A scientific approach to AML Compliance will lead to better decisions, reduced risks and lower costs.

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Purpose statement

This document lays out a proposal to make the practice of AML Compliance, specifically the configuration and tuning of transaction Monitoring Systems, more rigorous and scientific. It also demonstrates how Oracle Financial Services Compliance Agent can help financial institutions transition to this more scientific approach.

Building an AML Compliance Laboratory: Making Better Decisions through a more scientific approach to AML Compliance

The Art of AML Compliance

Anti-money laundering (AML) compliance today is an art more than a science. Financial institutions heavily rely on the judgement, creativity, and subject matter expertise of AML practitioners to translate AML regulations into policies and procedures as well as to assess and mitigate AML risk.

Institutions have to carry out AML risk assessments to determine the risks they face, identify red flags, and select scenarios and controls that address those risk and threats. This is largely a qualitative, judgement-driven exercise.

When determining thresholds for new scenarios, the onus is on compliance professionals to identify the key parameters of a scenario and suggest thresholds that can be piloted on real data.

However, as regulators have stepped up scrutiny of AML compliance programs, there is a growing expectation of more precision and objectivity in the way institutions select scenarios, parameters and thresholds.

The Science of AML Compliance

Increasingly, AML compliance is held to standards associated with more scientific disciplines.

AML modelling teams often find themselves scrambling to theoretically and statistically justify scenario thresholds and settings to model risk teams that hold AML models to the same standards as more quantitative financial or statistical models. There is often a reliance on compliance professionals to provide qualitative justification for choosing such thresholds and parameters in the absence of quantitative or empirical evidence.

These choices can only be empirically validated by deploying scenarios on real data and determining if they actually detect the suspicious behavior they were intended to capture. This is a time-consuming exercise that can take three to six months.

Running experiments with multiple candidate scenarios and thresholds in the real world is time consuming, which introduces new risks and costs as malicious actors continuously evolve their strategies and tactics. If the initial hypothesis about scenarios and parameters is wrong, bad actors have weeks to months to launder money undetected.

Evolutionary biologists face a similar problem when they try to understand how evolution works by studying human beings. Evolution has a telling effect only over hundreds or thousands of generations, which equates to tens of thousands of years for humans. Therefore,biologists study insects, such as fruit flies, or microscopic organisms, such as yeast or bacteria, where they can observe hundreds or even thousands of generations of these creatures within a reasonable time span in a lab.

This allows biologists to quickly make conjectures and empirically test them—the essence of the scientific method.

We believe that adopting a scientific approach to AML Compliance is key to addressing regulatory challenges and improving the performance of AML Transaction Monitoring Systems

An AML Compliance Laboratory

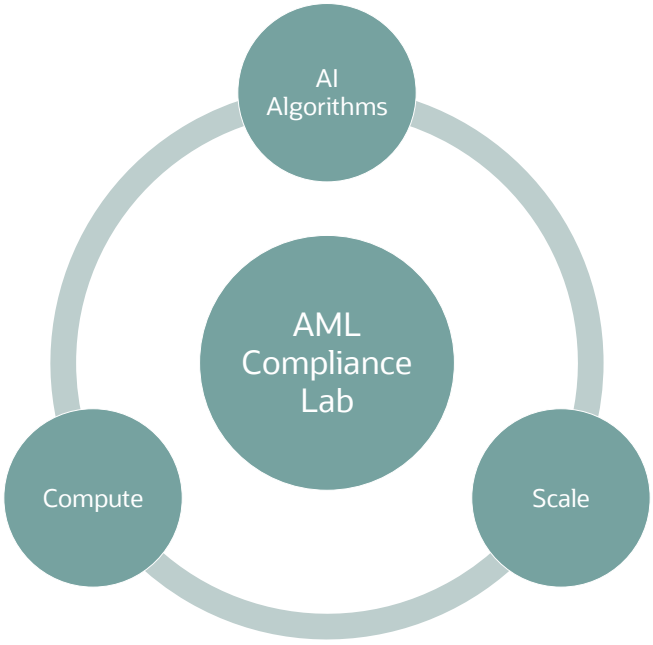
Divergent thinking is key to good decision making. The more options we consider and the more simulations we run, the more likely we are to settle on the best decision. However, in the AML world, evaluating multiple options is often prohibitively expensive and time consuming when quick decisions are essential.

Ideally, compliance professionals should be able to evaluate multiple decisions in a time-boxed manner in a laboratory setting. If compliance professionals had access to such a lab, they could evaluate multiple hypotheses and decisions before recommending one. The results of these experiments will provide empirical evidence supporting their decision, which can complement their judgement and subject- matter expertise.

If we could simulate the behavior and transactions of a potential money launderer, then we could experiment with various scenarios, parameters, and thresholds until we identify what works best. The performance of scenarios, controls, and thresholds on these simulated transactions will give us a good approximation of their performance in the real world.

We are convinced that the technology now exists to create an AML compliance laboratory where a compliance professional can empirically evaluate the impact of their decisions. Breakthroughs in deep reinforcement learning and distributed computing gives us the algorithms; ubiquity of hardware accelerators like TPUs (Tensor Processing Units) and GPUs (Graphics Processing Units) gives us the computing power; and cloud platforms like OCI (Oracle Cloud Infrastructure) gives us the scale to build an artificial intelligence (AI)-powered compliance laboratory where financial institutions can run experiments quickly at scale.

Figure 1. Compute, Scale and AI Algorithms are key to building an AML Compliance Lab



At Oracle, we are have built OFS (Oracle Financial Services) Compliance Agent, an AI powered AML compliance laboratory.

We have used forward reinforcement learning, a technique where agents learn to accomplish a goal autonomously by responding to rewards , to create adversarial agents that can learn to evade your transaction monitoring system, expose weaknesses in your system, and help quantify the efficacy of your AML controls.

We also are working on using inverse reinforcement learning, a technique where agents can learn to accomplish a goal by imitating successful examples, to create agents that can imitate and improvise on patterns of known money laundering typologies. These agents can then be used to empirically evaluate how well your system is monitoring for known red flags.

In addition, our team is creating metrics from the ground up that will provide insights into the performance of your AML controls and measure the impact of changes you make.

Furthermore, we utilize distributed computing platforms and algorithms, along with the latest hardware accelerators enabled by the scale of Oracle Cloud to support large-scale experimentation in a fast and cost-effective manner.

If you are interested in joining us on this exciting journey exploring the frontiers of AML Compliance and AI, please reach out to financialcrime_ww_grp@oracle.com to schedule a Demo for OFS Compliance Agent.

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