Available online www.jsaer.com

***Journal of Scientific and Engineering Research*, 2019, 6(12):315-317**

Research Article

ISSN: 2394-2630
CODEN(USA): JSERBR

Importance of Dynamic Rule Engines for Implementing Data Compliance in Financial Systems

Sandeep Rachapudi

Sandeep.Rachapudi@gmail.com

Abstract: Data compliance is the most crucial element for any organization. Adherence to laws, regulations, standards and protecting customer information are critical. Data compliance measures help to gain trust from customers and keep the company's reputation high. This paper aims to discuss the need for dynamic rule-based engines for data compliance and their benefits.

Keywords: GDPR: General Data Protection Regulation, AI: Artificial Intelligence, Automation, PII: Personally Identifiable Information, SSN: Social Security Number , NLP: Natural Language Processing.

Introduction

With the evolving complexity of compliance regulations, coupled with huge volumes of data being generated every moment, it's important to have a robust rule engine that can scale and accommodate new regulations.

The evolution of data has been marked by rapid technological advancements and growing complexity in how data is collected, stored, processed, and utilized. Data is now generated in various types. Structured, unstructured, and semi-structured data need to be regulated and adhere to data compliance guidelines. The evolution of the data lake has made applying data compliance regulations even more challenging.

Cloud adoption and cloud migration have become the norm for every organization dependent on the usage of IT systems. Given the rate at which data is generated, it is of great importance to implement a dynamic rule-based data engine.

Any organization that takes the least time to market its products with adherence to data compliance will have the best chance of gaining market share.

Problem

Data compliance is no longer an activity that is performed offline. The traditional ways of achieving data compliance in the form of periodic jobs and fixing data based on audit findings will not be sufficient with the new age of data. Data needs to be secured, processed, shared, archived, and deleted based on compliance regulations in real time.

Solution

Data compliance is only going to get more stringent, and new regulations will make way for old regulations to get updated or decommissioned. It is not possible to implement data compliance at scale in a constantly changing environment without the help of dynamic rule-based engines.

A robust rule engine should be component based, handle various aspects of data compliance. Every component of the rule engine should be able to act and make decisions autonomously in a way to hand over the data to its next phase.

One of the most important regulations to implement on data is (GDPR) General Data Protection Regulation. The regulation defines personal data as any information that relates to an identified or identifiable person. This includes names, email addresses, location data, and more sensitive information like health records.
Most of the personal data should be retained only until the desired transaction is performed and deleted after a defined period based on regulatory requirements. Organizations may choose to nullify some data or mask data without deleting entire records based on regulatory requirements.
A dynamic rule engine for compliance management should have the following application modules:

Data Ingestion
The ingestion module collects data from various sources and stores to a repository on which the rules are executed. A financial system comprising various business units will have standard parameters defined for data ingestion process. Here are some of the important parameters:
Parameters to identify a specific business unit
• Business Area
• Business Unit
• Business Line
• Sub Business Unit
Database object parameters
• Database
• Table List
• Table Type
• Column Details
Compliance Parameters
• PII Code
• Data Protection Type
• Data Protection Method
Rule engine parameters
• Ready to Chop indicators
• Retention Category
• Chopping Column
• Modified By
• Nullification Flag

Data Nullification
Once the data is obtained from the ingestion module, the rule engine begins applying rules. Most of the rules are applied in sequential order. It needs to be sequential, as some of the compliance guidelines may just require the data to be nullified instead of deleting the data.
Example: A purchase transaction may need the first and last name to be nullified once the customer ID is generated.
It is logical to have nullification engine to execute first, as we can't apply nullification on deleted data or masked data. Nullification flags help the engine determine the data to be nullified.

Data Deletion
The flags to chop data and the retention category would determine the amount of data to be retained or deleted. Often, data compliance regulations demand retention periods for data, which means that when the retention period is complete, the flag to chop data is signaled to the deletion engine.

Data Masking
Organizations choose to mask the data instead of nullifying it for various business reasons. Financial institutions have the obligation to securely store customer SSN, address and other PII information. Data masking techniques are applied to store PII information.

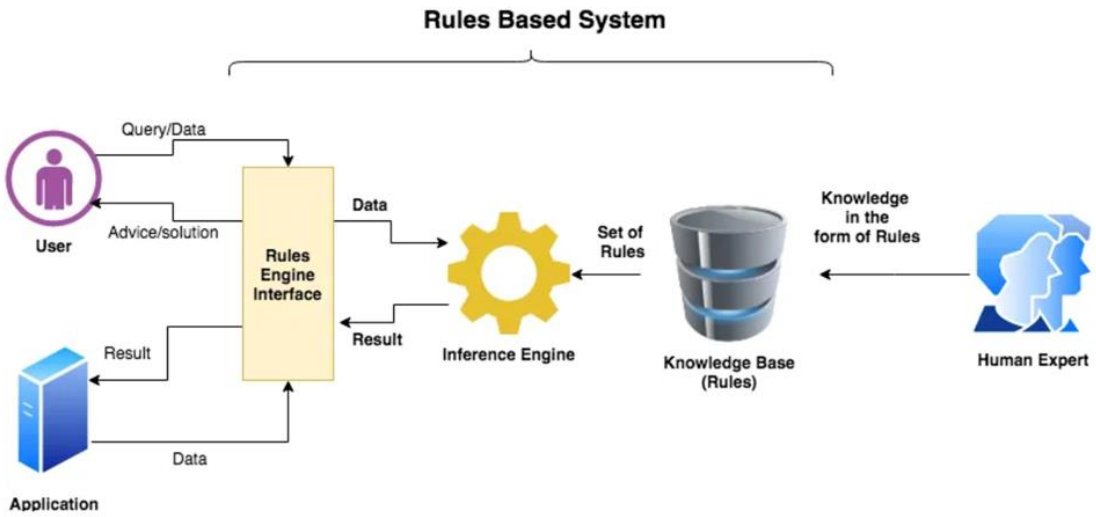

Fig. 1: *[1] Data rule engine interface*

Data Inference

Data that undergoes processing through the rule engine modules is inferred by the inference engine. This involves using statistical methods, machine learning models, or other analytical techniques to derive insights or make decisions from data.

AI in Data Compliance: With the advent of Artificial Intelligence (AI) in data compliance, automating compliance process for changes in regulations and compliance requirements is gaining more adoption.

Artificial Intelligence (AI) plays a significant role in enhancing data compliance by automating, monitoring, and improving various aspects of data management and regulatory adherence.

While AI offers significant benefits, it is essential to address challenges like accuracy, transparency, and data bias to fully leverage its potential in ensuring regulatory adherence.

AI can track and interpret changes in regulations and compliance requirements. Natural language processing (NLP) algorithms can analyze legal texts and automatically update compliance protocols.

Conclusion

Adhering to data compliance with rule-based engines is essential for any organization. Organizations that implement batch processing techniques for data compliance must upgrade their systems to create dynamic rule engines, that can adapt to changes in compliance requirements quickly.

It is not entirely essential to implement AI with NLP for creating rule-based engines. Financial organizations can leverage ETL framework and implement most of the business logic through database procedures driven by application configuration tables.

References

[1]. K Ramesh, “What is Rule-Engine”. https://medium.com/@er.rameshkatiyar/what-is-rule-engine-86ea759ad97d (accessed December 20, 2019)