

CASE STUDY

Mortgage-backed Securities (MBS) Pricing and Analytics platform

Mactores modernized Cello's analytics platform to resolve the expanding challenges of assessing the credit worthiness of MBS (mortgage back securities) bonds, risk assessment, and pricing analysis.

Case Study Summary

- The MBS industry is challenged with building data models to perform financial analysis, risk analysis, and pricing of a tranche or a bond in a trade or across multiple trades.
- Cello was looking for a pricing solution with flexible analytics infrastructure for valuation and risk management.
- Mactores used its Aedeon Data Lake accelerators leveraging Amazon Redshift migration accelerators and ETL Migration accelerators to reduce the implementation time by 40% and cost by 60%.

About The Customer



Cello Analytics provides deep insights into the Mortgage Back Securities (MBS) market.

Since 2010, Cello’s MBS strategy has provided clients access to prepayment alpha in the \$6 trillion Agency MBS market, focusing on Collateralized Mortgage Obligations (“CMO”). Cello’s Agency MBS strategy focuses on monetizing mispriced prepayment risk. Prepayment risk has an inherently low correlation to other major asset classes, and Cello’s disciplined approach to managing prepayment beta through interest rate cycles has reduced this further. The Fund’s correlation with the S&P since inception has been negligible. Cello actively seeks to reduce the interest rate and convexity risk through hedging with interest rate futures, options, or other Agency MBS.



Customer Situation

Cello Capital Management needed to modernize its analytics platform with a data lake to address the challenges of assessing the credit worthiness of a mortgage back securities bond (MBS), access risk, and evaluating the price. Collateralized debt obligations are a very complex process of evaluating the risk of a bond and providing detailed predictions for the performance of that bond in the MBS market.

Cello wanted to build a data lake to support their analytics platform to ingest terabytes of data each day from eMBS transactions to calculate pre-payments of the loans in each pool of tranches.

Thus they approached Mactores to strategize, design, and build an analytics environment to support their trade analysts and strategists.



“Mactores was able to deliver what Cello needed for our analytics platform. They could work with our teams whenever issues arose to resolve the challenges.”

-Dennis Ouma, COO Cello Capital Management, LP

Our Approach

Mactores Finance Industry experts collaborated with Cello to understand electronic Mortgage-backed Securities datasets from Fannie Mae, Freddie Mac, and Ginnie Mae.

After Identifying the dataset and Cello’s process of analyzing the bond, tranches, and loans, the Mactores team built data models for graph, index search, and tabular structure.

These models helped the data engineering team to migrate existing data pipelines to a new datalake environment to help build the “Slicer Analytics Platform” for Cello.

Business Outcomes

With the new analytics environment, Cello Analysts and Trade Strategists accelerated their analysis of multiple bonds and tranches across markets with **40% higher speed** with **3x more dimensionality** to the data.

The graph and index search enabled the Cello team to quickly identify patterns and clusters of loans across bonds to precisely evaluate the risk and the bond's price point.

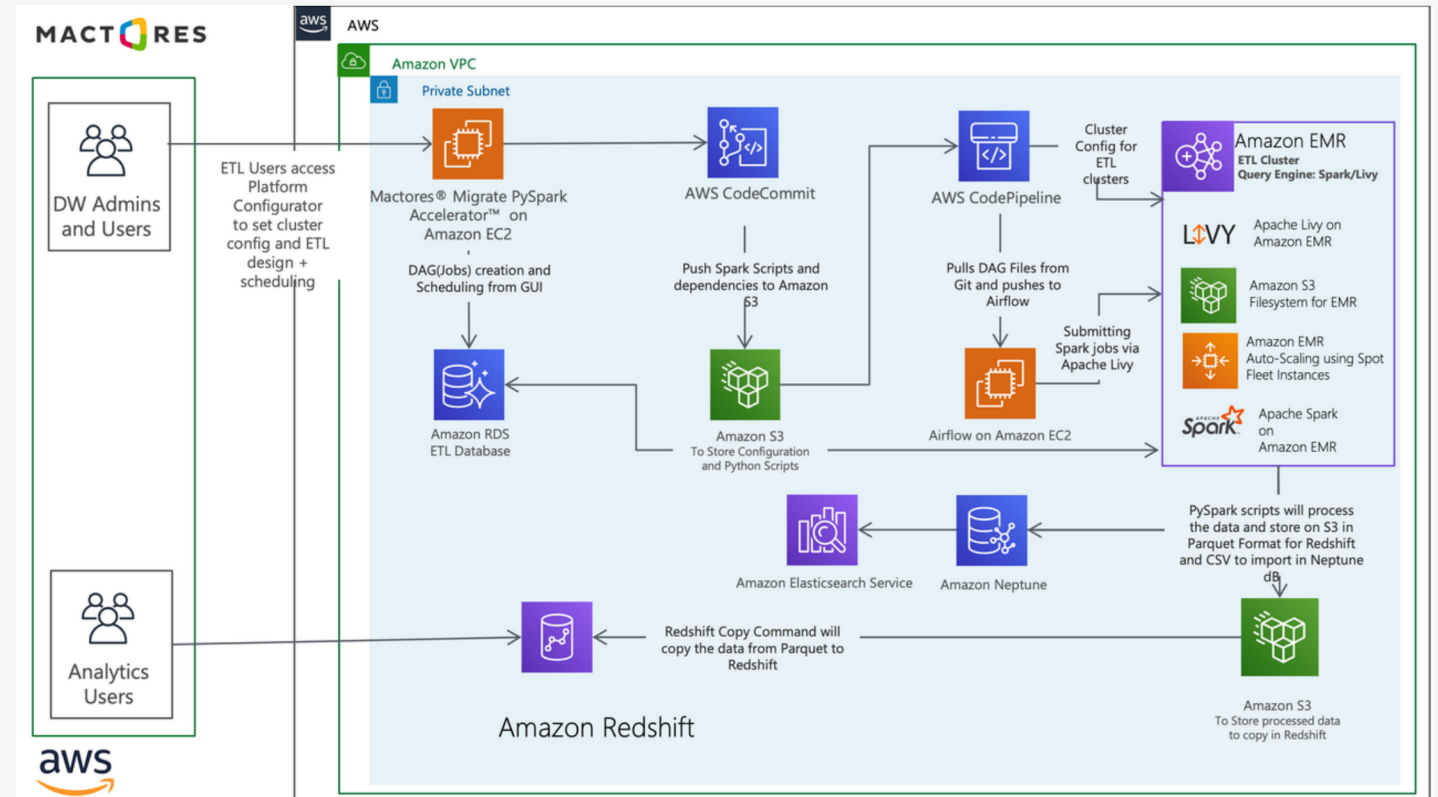
Technical Outcomes

Mactores Aedeon Data Lake ETL migration accelerator reduced the time to migrate and implement data pipelines for Cello by **60%** while providing an **80%** improvement in performance due to Apache Spark Engine running on Amazon EMR. Amazon NeptuneDB provided **subsecond** response times for billions of nodes and relationships, helping analysts quickly identify patterns.

Amazon ElasticSearch (now OpenSearch) improved the clustering of loans based on similarity **by 90%**.

Amazon Redshift-backed materialized views provided precomputed tabular data for Cello analysts to cross-reference with the graph and search results from NeptuneDB and ElasticSearch, respectively.

Reference Architecture





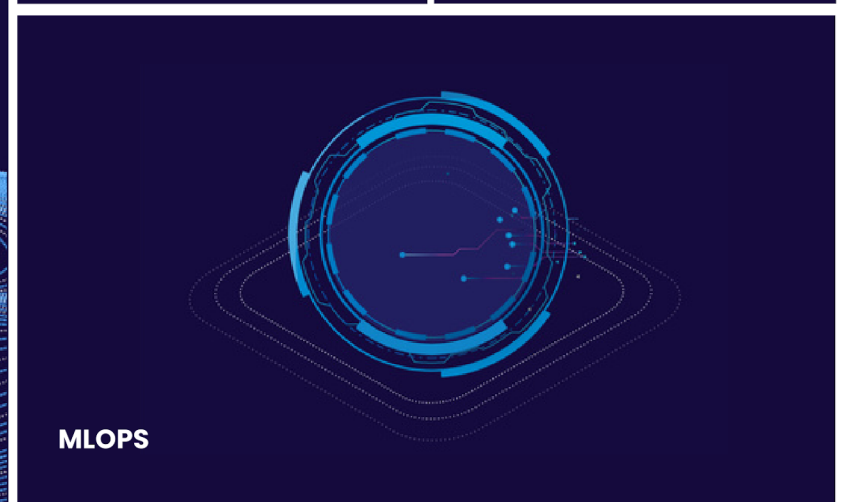
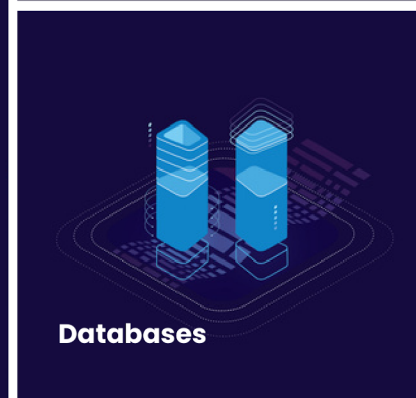
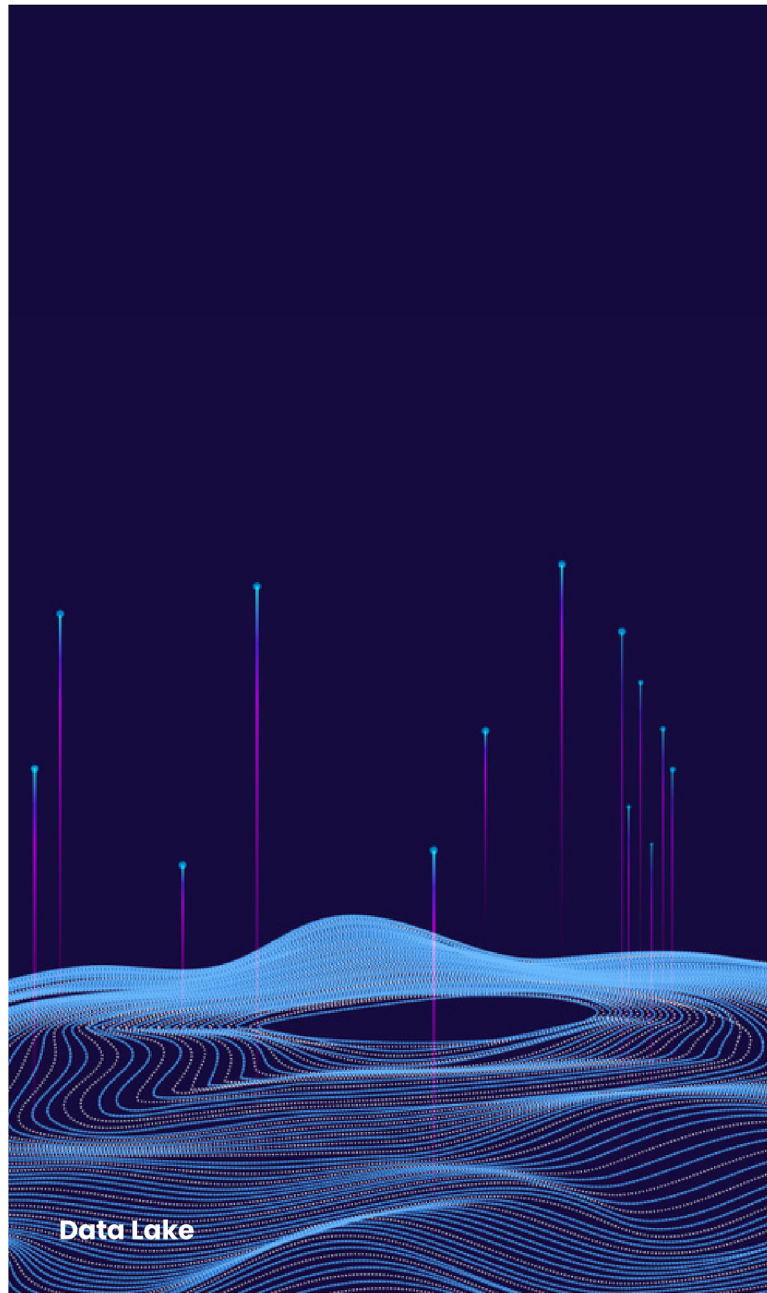
Getting Started

Without a defined problem statement, the Mactores data engineering team conducted an ideation workshop to find possible solutions to their industry-specific challenges.

During the workshop, the problem statement became articulated so clearly, that Cello agreed to move directly to a POC (proof of concept). Mactores collaborated with Cello to define the scope and deliverables and performed the project within five weeks.

The results of the POC provided the evidence needed to convince the executive leaders to move forward with a production solution delivered within three months.

Our Solutions



Our Process

Digital transformation via assessments, migration or modernization

We work alongside your tech team to assess and strategize what you need and how to implement the right data solutions on time, on budget and with c-suite buy in.



Assess

- Discovery Automation
- Future State Assessment
- GAP Analysis
- End State
- Road Map
- TCO



Migrate

- Strategy
- Execution
- Migrate
- Migration Acceleration



Modernize

- StrategyFuture State
- Design
- Build
- Automate

AWS Validated Competencies



AWS Validated Service Deliveries



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