

# Scalable Data Repository and Data Visualization

*The client is a leading provider of financial technology solutions to banks and corporations of all sizes in the US, EMEA, and Asia-Pacific. The company specializes in transaction banking solutions offered as software license and Software as a Service (SaaS). Thousands of financial institutions and companies worldwide rely on them to improve their operational efficiency, increase revenues, and to achieve greater competitiveness through business-to-business services.*

## Situation Analysis

The client's major product lines include payments and liquidity management, cash management, financial messaging, financial supply chain through electronic invoice presentment and trade services, merchant services such as credit card gateways and mobile banking.

To enable banks to understand the information about its customers, the client wanted to provide an interactive Data Visualization Tool to the banks that use their software. The client partnered with e-Zest for the design and development of Data Visualization Tool that will enable the banks to understand the following information about their clients:

- Overview, trends, accounts, users and transactions related information.
- The visual and graphical charts will serve as a quick reference for the Bank Account Managers to know more about their customers and their activities.

The client wanted a visualization tool that should present the information with attractive charts, colors and with best User experience (UX). e-Zest took this assignment to deliver what the client desired.

## Solution Architecture

During the requirement briefing to the Business Analyst and the Project Management team, client was very specific they did not want to use any proprietary data visualization tool because it will increase product costs and create licensing overhead. They also required a highly scalable tool that could meet the performance standards.

After thorough understanding of the client's requirement, e-Zest proposed to develop the dashboard and visual charts. Since the client desired for a scalable database which also has to be an open source,

the dashboard and visual charts were developed using D3.JS, DC.JS and Elasticsearch database. Elasticsearch was a perfect fit for its compatibility with Java and being a scalable open source solution.

## *Advantages of the technologies used:*

- D3.JS (or just D3 for Data-Driven Documents) is a JavaScript library for producing dynamic and interactive data visualizations in web browsers. It effectively makes use of the widely implemented SVG, HTML5, and CSS standards.
- Elasticsearch is a distributed, scalable, and highly available solution. It provides real-time search and analytics capabilities and sophisticated RESTful API

## *Project Breakthroughs*

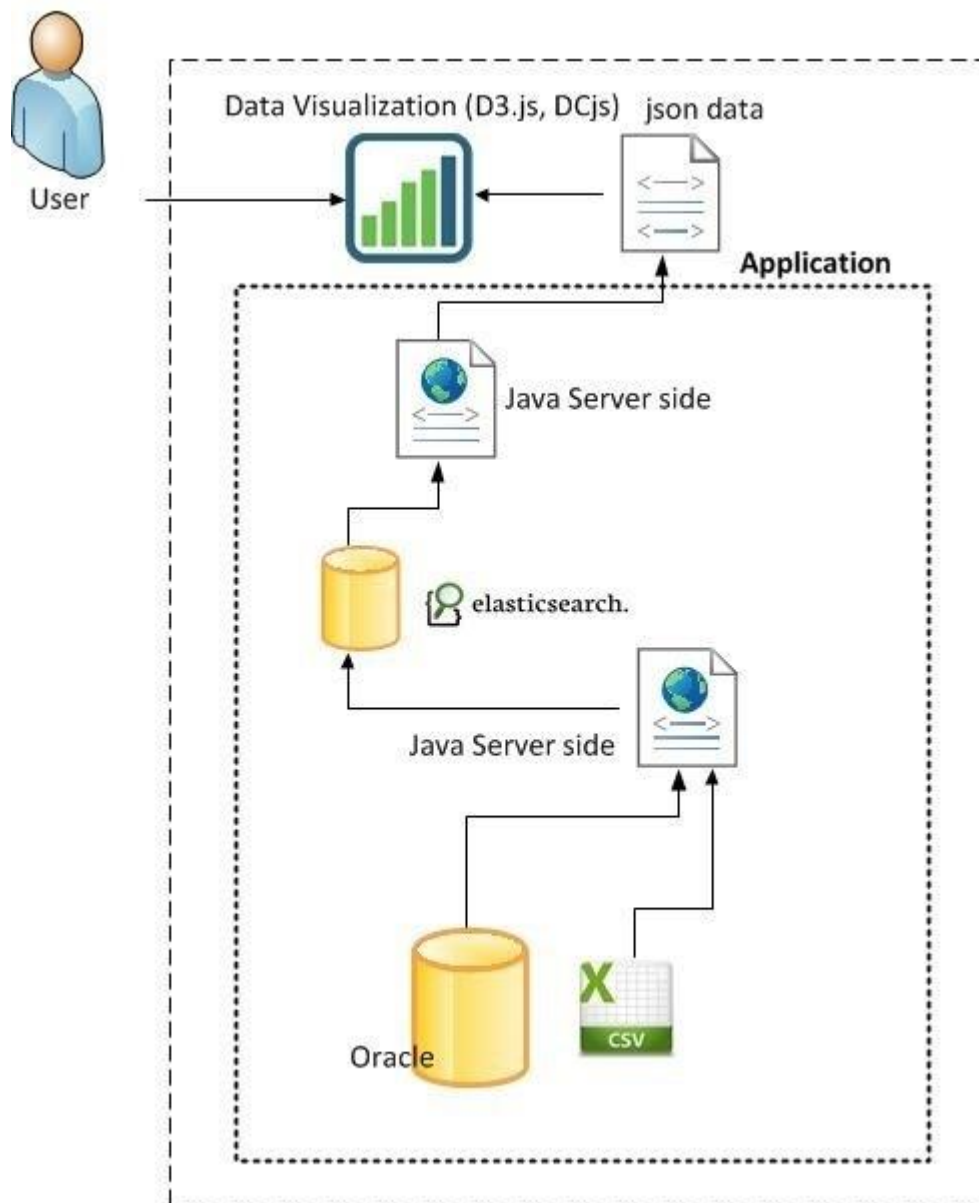
Due to Agile methodology and Scrum practice followed at e-Zest, the various teams involved in the project that included Business Intelligence, development and UX team collaborated flexibly to adapt to the emerging business realities to deliver a best-in-class Data Visualization application to the client. This successfully enables the user to:

- Use the dashboard to have a high level view of the key performance metrics of the bank in a single view.
- Client's information page: User can view all summary information of clients at one place. Also, use the graphs for filtering the client information and view over all client trends which was an additional feature provided by e-Zest and was highly appreciated by the client.
- Client Summary page: On this page the user can view detailed information of a particular client.
- Advanced data filtering features were provided with good data visualizations and the data trends.
- Creation of slice and dice feature on the dashboards: Using this unique feature, users can view the information in a graph on the dashboard menu which is highly useful for quick data visualization.
- Dashboard page: On the dashboard page, the user can view and filter the following:
  - Service Page
  - Account Managers
  - Location
  - Industry segment
  - Bookmark
  - And more dimensions

## *Technologies and Tools*

- D3.JS Data visualization framework
- DC.JS Data visualization framework
- Elasticsearch
- Java
- AWS cloud

## High Level Architecture



## Technical Challenges

- Since banks have multiple data sources, combining data from various tables and data sources was a challenge.
- Understanding of the banking domain and the user behavior of bank users while preparing the visual charts and graphical charts that fit the industry standards and the users.
- Simplifying huge amounts of data and making the data visualization tool simple for the users to draw meaning was a challenge for the UX.

## Business Benefits

- Bank users were able to make better use of its existing data.
- User can view the business data frequently using multiple filters and gain valuable insights.
- Users can view customer revenue and business volume trends and identify its high value and low value customers that empower them to make quick decisions.
- The client was able to add an analytics tool to its product portfolio because of which the company was able to improve customer satisfaction.
- Client's bank customers did not have to purchase a new data visualization tool to analyze the bank software data.

## Bottom Line

Client's requirement to have a data visualization tool that did not use any proprietary technologies for better return on investing was understood and taken care by e-Zest. Elasticsearch proved to be a robust and scalable solution as per the client's requirement. D3 and DC frameworks which are open source provided very attractive charting capabilities. In addition, the data visualization tool with good filtering and interactive charting features was highly useful and liked by the client as it improved their customer satisfaction.

e-Zest delivered the project successfully leveraging its Big Data and Data Visualizations skills to build an effective Dashboard and Data Visualization tool that helped delight the client and win their trust.

