IMPROVING
DRUG SAFETY USING RWE

Leading Global Pharma Giant trusts SecureKloud to deal their Enormous Real World Evidence data

About the Client

The client is one of the top 10 pharmaceutical companies in the world that applies scientific expertise and innovation to society's biggest health challenges. Their vast product portfolio is distributed across three divisions that have innovation power and global scale.

The challenge

The client hit a bump in their real world evidence (RWE) efforts when their analytics queries were taking days to complete. On top of that, it was challenging to add new data sources to their platform, sometime taking weeks to set up. They were looking for a technology partner who could help them take their RWE platform to the next level. Scaling was also a significant challenge as the data size was forecast to increase ten fold in the immediate future. The incumbent platform also lacked high availability and backups which led to frequent downtime. Another challenge was to implement the high security and compliance requirements that are essential in pharmaceutical environments.

Why AWS

AWS gives an option of flexible services which are designed to enable companies to build and deliver products more rapidly and reliably. This can be done using AWS and DevOps practices.

These services simplify the following:
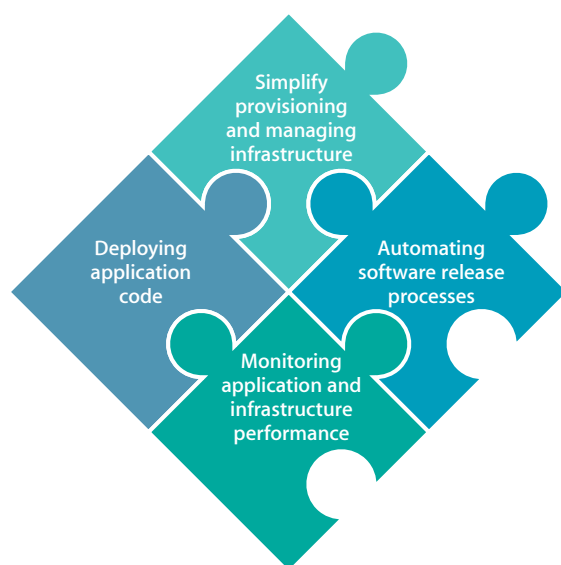
DevOps is the blend of social methods of insight, practices, and tools that builds an organization's ability to deliver applications and services at high velocity. This helps evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes. This speed enables organizations to better serve their customers and compete more effectively in the market.

Why SecureKloud

SecureKloud with it's unique combination of Cloud and Analytics expertise was the ideal partner. SecureKloud solution architects did a comprehensive assessment of the platform architecture and recommended the adoption of CloudEz and moving the entire platform to the cloud.

SecureKloud Differentiators

RWE domain knowledge: SecureKloud is the partner of choice for RWE implementations at many of the top pharmaceutical and life sciences organizations. We bring years of experience in RWE solutions.
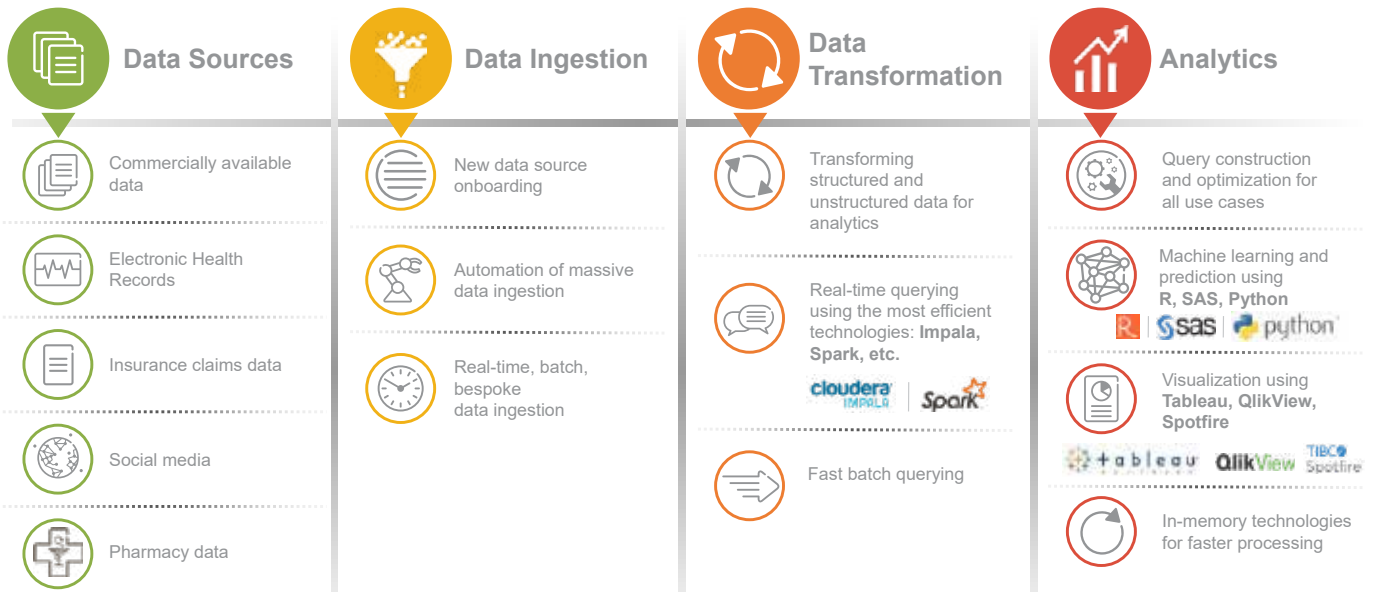
CloudEz: SecureKloud is leader in building GxP cloud solutions for complex life sciences use cases such as Genomics and Big Data for many years. The CloudEz platform brings quality, durability and repeatability to your GxP cloud implementations

Analytics: World class analytics leadership in handling big data, machine learning, prediction, and visualization. In addition to life sciences, we have helped many industries from cyber security to advertising adopt cutting edge analytics technologies

Our Solution

Once the client awarded the Cloud and Analytics services contract, SecureKloud started setting up a scalable and secure GxP compliant Cloud Infrastructure. The following features were implemented using an Agile approach

- Secure Virtual Private Cloud was instantiated with the necessary capacity to handle the current data sources and scalability for future data sizes running into multiple Petabytes.
- High-availability and redundancy was architected into the Cloud platform
- The architecture was divided into multiple clusters for data ingestion, data transformation, and analytics so that each stage was individually scalable to accommodate various growth scenarios
- A proper version control mechanism was set up to manage the Cloud versions
- Data ingestion service was developed to automate data ingestion from the various sources
- A separate cluster for data staging after ingestion was created to enable easy data transformation
- Impala, and Spark were used to transform raw data into information
- All analytics queries were optimized to speed up processing on the analytics cluster
- In-memory technologies were deployed for those visualization use cases that required faster response and handled larger amount of data
- The entire platform was fully managed using a DevOps approach to change management and operations.

Data Sources	Data Ingestion	Data Transformation	Analytics
Commercially available data	New data source onboarding	Transforming structured and unstructured data for analytics	Query construction and optimization for all use cases
Electronic Health Records	Automation of massive data ingestion	Real-time querying using the most efficient technologies: **Impala, Spark, etc.**	Machine learning and prediction using **R, SAS, Python**
Insurance claims data	Real-time, batch, bespoke data ingestion	cloudera IMPALA | Spark	Visualization using **Tableau, QlikView, Spotfire**
Social media		Fast batch querying	tableau QlikView TIBCO Spotfire
Pharmacy data			In-memory technologies for faster processing

Cloud platform that provides GxP compliance, Security, Scalability, High Availability, and Disaster Resilience

Benefits

Within 3 months, the results of the CloudEz platform and the full stack analytics re-engineering approach were apparent to the entire team. Data ingestion was an order of magnitude faster and new data sources could be added in a seamless manner. However, the most apparent benefits were in the area of query processing -- even the most complex queries were now taking just minutes instead of days.

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