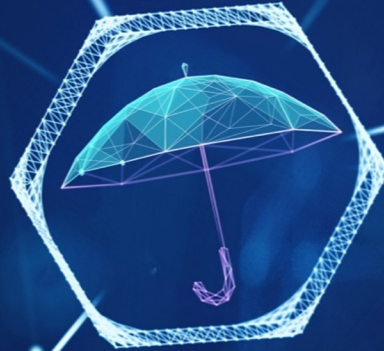Whitepaper

Maximizing The Value of Data in Insurance

Abstract

In today's digital world, data is generated and collected from a wide range of sources such as internal applications, external partners, social media and third parties. The data is not homogeneous and can be structured in a traditional database, or unstructured, such as documents, images, and video files. To make it more complex, data resides in a variety of different locations: on-premises, cloud and some siloed, thus making it difficult to get a complete enterprise view of all data and to conduct analysis. Data is an asset and using it wisely can help in data driven decisions and monetization. These challenges can be overcome by creating a virtual data layer which allows easy and secure accessibility and analysis of organization wide data without depending on any individual system. [1]

Key Takeaways

01

Current problem with growing data

02

Concept of data Virtualization, logical architecture, and data analysis

03

Data analysis explained using insurance use cases

04

Data democratization, data products, and data marketplace.

05

Approach to data virtualization

Introduction

Data is everywhere in an organization in many forms- structured, unstructured, and semi-structured - and continues to grow. In addition, data comes from partners, social media and others that are external to the organization. It is not stored in one central location to provide an enterprise view; rather siloed in many locations within the organization.[2] More time is spent on locating the data than the actual analytical work. Insurance as an industry is built on troves of data and this problem of being person-oriented results in excess effort to uncover data and diminishes the ability to make data driven decisions. Data should be democratized and made available for all users who have a legitimate use for it without compromising security and data privacy concerns.

A modern way is to keep data in its native location in its own data format and use it to perform the necessary analysis connecting with other data sets on the fly using a feature called **Data virtualization**. This document explains the principle of data virtualization and how it can be used in Insurance to get value out of data in analyzing risk of an applicant, predicting the probability of claims and the prospect of doing cross-sell and upsell within life and annuities.

Use Cases

The following Insurance use cases illustrate how data virtualization can facilitate combining diverse data sets with ease, perform analysis to create value and use them for data driven decisions and monetization.

In the area of **risk assessment**, it is important to analyze the risks associated with each prospective applicant and current insured before making a quote. The data relating to this such as profile, geography, employment, claims history, social media, vehicle driving behavior, mortality, medical, financial, lifestyle and claim propensity come from many systems both internal and external and in different formats. By having the technology and network experts work under the virtual layer to do the necessary mapping to the physical layer, all necessary data can be made available in the virtual platform so that business users can focus on complex analysis without regard to how to obtain the raw data. Any required ETLs and low-level operations must be set up by the technology experts as a one-time activity. As a result of making data easily available, business users can do personalization for insured and decide on rates which can be standard, additional for added mortality and in extreme cases declination of the coverage.

Similarly, on the other side, it is important to assess the **probability of policies to come up for claims** during its lifecycle, to enable plan of action and for product portfolio rationalization. Some of the key factors are applicant profile, geography, hospitalization, drug usage, individual habits employment, past claims history, social media, online behavior, and more. All data relating to the above can be pulled from the virtual layer and simulation can be done using regression models, to get risk of Claims on new applications.
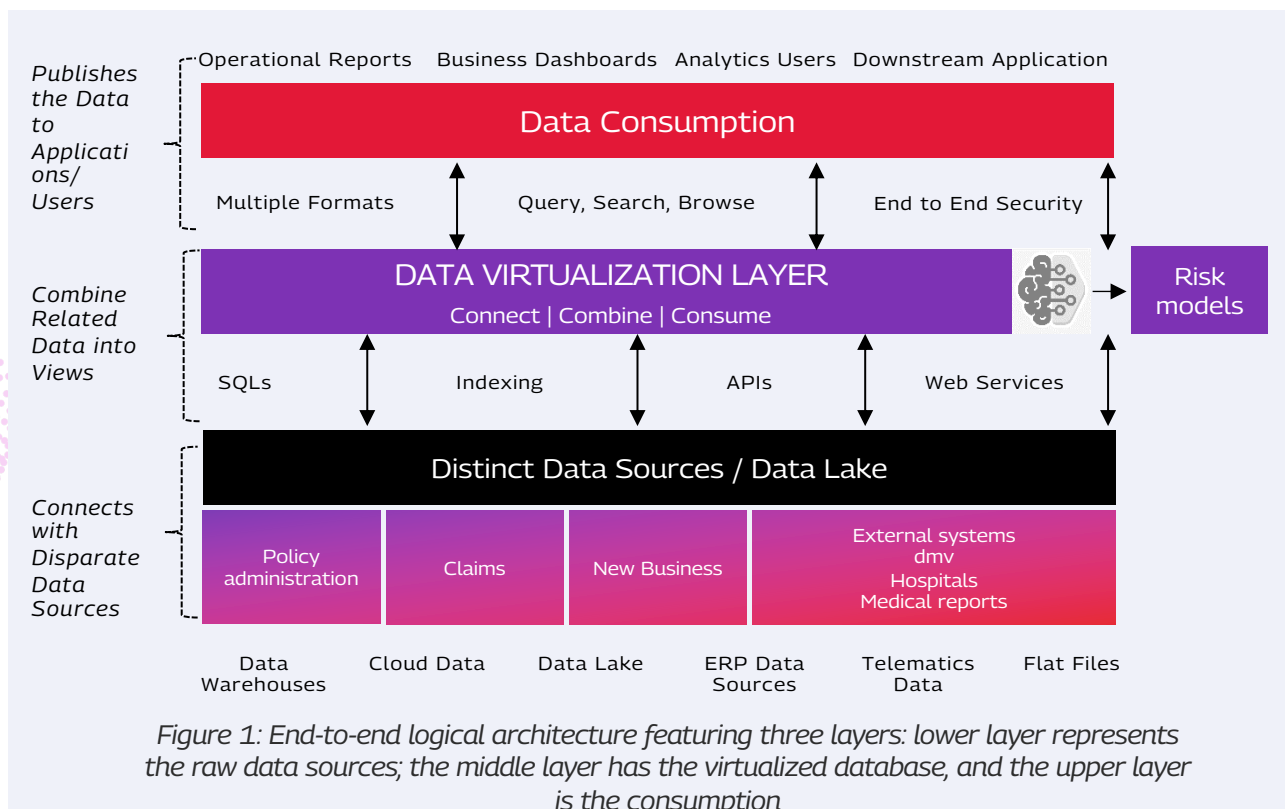
To increase business with the existing customer base, **upsell & cross sell**, can be practiced with data points on demography, lifestyle changes, portfolio analysis, customer behavior, employment, survey data and social media and purchasing habits. Customer segmentation is another technique to understand the needs of the target audience and create tailor-made products and marketing campaigns.

Understanding Data Virtualization

To facilitate a business analyst's work across diverse data coming from numerous sources and locations, it is essential to access all data, preferably from a centralized location, with utmost security. We accomplish this using a data plane that acts as a single pane of glass for data from all data sources, decoupling the need to create links with physical data sources. To address privacy concerns, a strong governance mechanism leveraging the organizations' identity management can be used to grant role-based access with strict audits for monitoring any suspicious attacks.

Defining the virtual data process flow for Insurers

Using a data virtualization platform, data from diverse application systems both internal and external regardless of the location and format can be brought into the virtual layer in a unified format. 7 Users can access it from the virtualization layer using SQL, include joins with other data sets and perform processing before consuming them for their use cases. This way a business user can focus on his analytical work while the technology related heavy lifting involving linking to the physical sources and data format changes from unstructured to structured can be done by technology and network experts. This division of labor enables resources to focus on their area of specialization, thus boosting productivity. This virtual platform will store the metadata of all the data stores without moving the data physically, so that users will get a complete view of all data sources across the organization. Data movement from the source will happen only during actual query execution.[3]

Figure 1: End-to-end logical architecture featuring three layers: lower layer represents the raw data sources; the middle layer has the virtualized database, and the upper layer is the consumption

The user authentication of the enterprise can be integrated with the virtual layer to use pass through authentication so that the native sources trust the virtual layer and let data traffic go through. This capability of authentication at the virtual layer enables federation of queries to multiple data sources. By leveraging push-down optimization, all the heavy lifting work involving joins, filter and aggregation can be done in the native sources thereby freeing up the virtualization layer from data processing and reducing the data movement over the network to only what is needed for consumption.[4] (denodo.com)

Through data catalog, data in virtual databases and APIs can be catalogued and published in the data marketplace. Using roles mapped to users and user groups, access to data can be controlled at a granular level.[5] For example, a business user in the risk department will have access only to data relating to applicant, employment, past claims history, social media data and vehicle driving behavior analysis.

For data governance and secure access to the virtualization layer exposing data in a unified form, a ticketing system such as ServiceNow can be used for workflow process involving many approvers. The logs of the ticketing system can be used for any historical analysis.

Data in the underlying data stores must be encrypted using cryptography tools implemented by systems such as key vault, cloud based key management system.

The access logs of the virtualization layer should provide the ability to audit access at a query level, data and time of access and the volume of data. [6] By assigning a value to each data set available at the data marketplace, and by rolling up the value of data consumed to a data domain, the true value generated for the investment can be calculated. Based on the outcome, success can be replicated in new use cases. Using a simple reporting tool, reports and dashboards can be created for senior management level presentations.
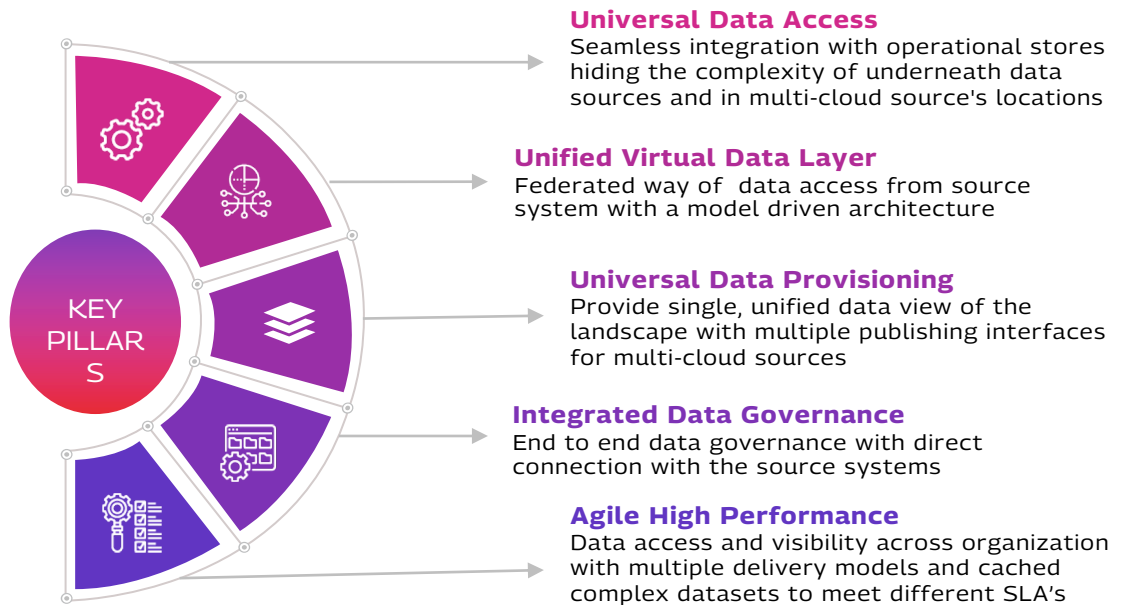
KEY PILLARS

Universal Data Access
Seamless integration with operational stores hiding the complexity of underneath data sources and in multi-cloud source's locations

Unified Virtual Data Layer
Federated way of data access from source system with a model driven architecture

Universal Data Provisioning
Provide single, unified data view of the landscape with multiple publishing interfaces for multi-cloud sources

Integrated Data Governance
End to end data governance with direct connection with the source systems

Agile High Performance
Data access and visibility across organization with multiple delivery models and cached complex datasets to meet different SLA's

Figure 2: Key Pillars of a well-designed data virtualization layer

Leveraging Data in Insurance to Generate Business Value

Data is an asset, and it must be used wisely to steer the organizations' growth in the right direction. Cloud computing facilitates deeper analysis of data with its pay-as-you-go approach that makes it easier for organizations to try out a new concept. As the insurance industry is built on troves of data, it should be used as a blessing to harness its power for data driven decisions and monetization. In preparation for adopting this new concept, an organization must make fundamental changes to the way it organizes its business functions. It is typical of many organizations to have operational and analytical data planes each with different use cases and owners. In the interest of generating value, it is important to create business domains that connect these two data planes. [8]

In the journey to data virtualization, it is important to define the goals, both short term and long term, estimate the cost and ROI and follow a phased approach for flexibility, and the ability to replicate success and scale for a successful IT strategy.

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