# Predictive Analysis of Weather Forecasting using Sisense

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ABSTRACT

Weather forecasting is the application of science and technology which is used to analyze the state of the atmosphere. Weather forecasting is very important to protect life, property and to predict the future value of a measure. It can be achieved by collecting quantitative data about the current state of the atmosphere using scientific process. There are many mathematical models for predicting weather forecasting. Sisense is the most popular model. This platform specializes in data preparation using ELASTICUBE TECHNOLOGY with the ability to mash up different data sources. Elasticube technology is simple and flexible to use. The Sisense dashboard application provides a comprehensive set of tools allowing implementation of customer specific dashboards in short period of time.

KEYWORDS: weatherforecasting, elasticubetechnology, sisensedashboard

INTRODUCTION

Human society is vulnerable to severe weather and climate events that cause damage to property and infrastructure, even loss of life. The multidimensional aspects of complex extreme events can be discussed and statistical can be presented for understanding simple extreme events [1]. The various tools are used for the visual representation analytics of data. These tools are Tableau, Plotly, Data Hero, Chart.js, Raw, Sisense, QlikSense and so on. Sisense is the most popular alternative among users. Sisense servers with high level of sophistication and capabilities even though it has high price tag.

Sisense is an end-to-end business intelligence (BI) solution which is developed with BI software to be accessible for any type of user, even with little or new prior experience.

The ElastiCube manager is a visual environment. It enables to structure and import multiple data sources, creates relationships between data and performs ETL(Extract, Transport, and Load)which could be processes to prepare data for analysis and visualization. Using dashboard application, it provides many options and capabilities. It also determines the editing rights to the viewer to whom the creator share with[2]. The widgets appear in a scrollable list one below the other. The dashboard can be viewed in Sisense's web browser or native mobile application.

SISENSE ARCHITECTURE AND FEATURES

Sisense architecture comprises of components like data sources, BI server, front end apps, device to run. The data sources consists of relational databases, spread sheets and files, web applications, hadoop big data. BI

server consists of elasticube server(Sisense Engine) and web server. The front end apps consists of Elasticube Manager and Sisense web application [4]. It runs on any device like laptops, desktop and mobile (Mobile Web, Mobile App). Sisense standalone application offers processing data and text mining with interactive analytics tools. Elasticube, their analytic database uses a Chip technology to process 10 times faster in its memory. This technology enables single server and minimal hardware with the ability to handle even terabytes of data and dozens of concurrent queries. It helps in joining of multiple data sources and generates interactive dashboards for business intelligence reports.

Sisense technology is developed as a columnar database (Relational database) which stores information as columns rather than as rows. It is more effective for data analytics which allows for the minimization for the amount of data. The database uses disk, RAM and CPU efficiently. Sisense utilizes the memory available in the CPU. It can able to move data 50-100 times faster than in memory solutions since CPU is faster than RAM [3]. Sisense application enables Sisense server and it runs on both web browsers and mobile devices. It provides a user interface medium in which users can design, view, share and explore dashboards. The UI of the dashboard is pretty robust and it offers a nice range of customization features. A beautiful visualization of data analytics can be made easily by drag-and-drop of data to join large sets of data into a single repository and builds dashboards with no script and no hardware expensive. No limitation for the creation of dashboard for visual analysis. The widget is a visualization of data in dynamic representation. It allows a choice of selecting the type of data to be appear in the widget and also the chart type for visualization. Widgets are comprises of fields which represents the data in the data

sources [4]. Fields can be classified into two groups during designing of widgets. They are Numeric fields and Descriptive fields. Numeric fields are quantified data such as sales, scores, number of values and so on. Descriptive fields are used to label and categorize such as products, locations and categories. Widgets can be created from the fields displayed in a data browser.

CREATION OF FORECAST

Let's forecast the value of the measures for the weather. All forecast algorithms are simple models of a real-world data generating process (DGP). For a high quality forecast, a simple pattern of DGP must match the pattern of the model. Quality metrics are responsible for the measure of how well the model matches the DGP. If the quality is low, it measures the precision of an inaccurate estimate. Elasticube is needed to work with data in Sisense. An elasticube is Sisense's analytical database. It enables connecting to multiple data sources and even runs complex queries. New ElastiCube File is selected from the Sisense Elasticube Manager. Import the base table which must be in the form of CSV file. On creating a forecast, select the date dimension which specifies the unit of time and the date values are measured [4]. The range of such units includes Time, Year, Quarter, Month and Day. The unit for the date value is known as the granularity of the date. The table consists of information about Date (year) in the column shelf and forecast measures in the row shelf.
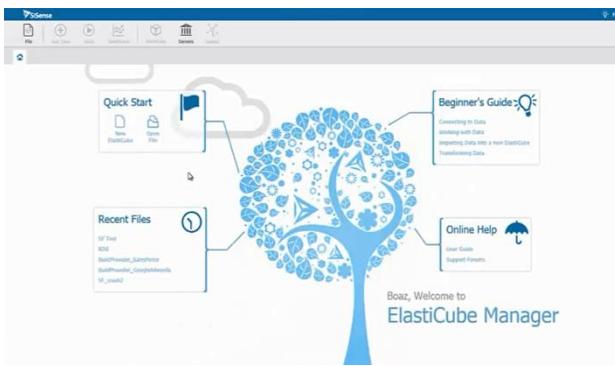
**Figure1**: Sisense dashboard



**Figure2**:Elasticube manager

CREATION OF NEW DASH BOARD

Now, the data sources have been connected. In more cases, the name of the table in the ElastiCube defaults to the file name. The creation and deletion of relationship between tables is as simple as drag and drop in an ElastiCube technology. All the tables in the Elasticube can be connected to each other, regardless of its source. The relationships are automatically imported once the multiple tables from the same database is imported. After the creation of new dashboard, the widgets can be added to it. Inside a new widget, a list of fields will be displayed according to the table they belong to. This window is called Data Browser. From this, the fields available in the ElastiCube can be easily find [3]. By adding a filter, a weather forecast data source on a specific year can also be focused. the FILTER PANEL in the

dashboard adds dynamic filters to the dashboard. A dash board can be rearrange by drag, drop and resize of the widgets. On doing so, it allocates space for the widgets and splits the area in the dashboard. The dash board created enables to interact with the simple way of marketing and track performance targets. When a designer shares their dash board to a recipient, designer can configure Sisense to send periodic email notifications which contains the dash board inside the email's body to a designer's dash board recipients. Administrators and designers can notify additional Sisense users and can configure the alert's advanced settings[5]. Users maintain their copy of their dashboards across multiple environments for many reasons. There are two options for migrating dash boards. The first option is to export dash board in a dash file and then to import the dash board. The second option is to copy the dash board. Sisense does not change the appearance of data visualization and its values. The forecast time period in the forecast describes the options dialog for forecast which reflects the actual granularity used. The information for the change of aggregation type is available for the measure of forecasting.

CONCLUSION

Sisense is a leading business intelligence (BI) software and offers a host of benefits to the users. It is designed to let the business users to create powerful and meaningful dash boards easily without being a developer or a data scientist. It provides flexible design choices for the support of higher availability and scalability for the Sisense configuration. Sisense software provides the better way to implement the data visualization in a very short period of time even for a designer who has no prior experience. It also configures powerful visual reports which can be used to generate smart analysis. It has an easy-to-use interface and its fast system is really a best business intelligence software.

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