

# Customer 360 with Data Science

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**Abstract:** To improve the customer experience, it is necessary to analyze and visualize the Customer in a 360° perspective. It is important to understand past, present and future of the customer journey. Customer 360 will act as guided tool to boost the operational efficiency and customer relationship. This paper discusses about a framework to build Customer 360 by leveraging Data Science. Many Big Data tools are used along with Machine Learning techniques to provide a full 360° Customer Insight Pack.

**Keywords:** Big Data, Customer 360, Machine Learning, Python

## 1. Introduction

Customer Service can be considered as the backbone for any industry. Customer acquisition is more costly when compared to retention, hence it is necessary to focus more on the customer satisfaction. Customer service executive should have the 360 degree visualization of customer. When customer approaches the organization, representative should be able to serve the customer with few clicks and process the request efficiently. This can be achieved by using Data Science with big data tools, real time streaming and predictive techniques.

## 2. Customer 360

Customer 360 can be defined as a medium through which customer behavior is analyzed in real time to make key decisions by customer service executive with the help of guided analytics. It is necessary to focus on the past history of the customer along with the current engagements and should be able to predict future interactions. Customer 360 process can be divided as follows:

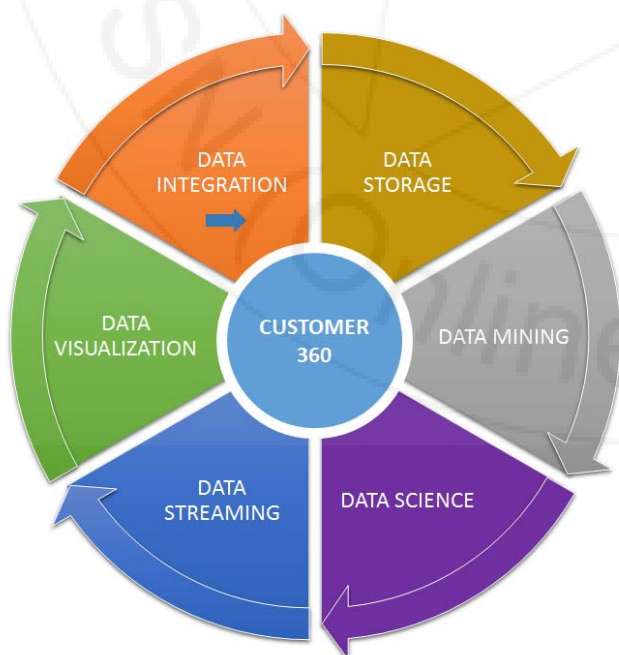


Figure 1: Customer 360 Life Cycle

### 2.1 Data Integration

It involves aggregating or merging of different data sources, data may be from OLTP database, claims, customer database etc. or can be from external data sources like Facebook, Twitter, Blogs etc. We should be able to merge all these data sources by defining certain rules and keys so that we can further store and mine the data.

### 2.2 Data Storage

Integrated data is pushed to a unified database platform for further analysis. Data can be stored in Hadoop File System or in a No SQL database like MongoDB, Cassandra etc. It is necessary to store the data in a standard format so that it can be easily accessed and further processed.

### 2.3 Data Mining

Once the data is integrated and stored, it is necessary to process or shape the data so that it can be used for further analysis. It mainly involves pre-processing and feature extraction using distributed data processing with the help of big data tools.

### 2.4 Data Science

Analysis phase where customer insights are provided by scoring the customer behavior from the data. It is achieved by predictive techniques and machine learning algorithms.

### 2.5 Data Streaming

Analyzed data is processed in real time so that customer service executive has customer insights ready when customer approaches the organization. Data Streaming is performed to provide real time analytics.

### 2.6 Data Visualization

This is the final step where the customer insights are provided with the help of visualization so that it will be easy to interact insights by customer service executive as well as the customer.

### 3. Customer 360 Framework

Framework has different stages as explained before which will help to provide customer insights in a 360 degree perspective. Entire framework is hosted on a Hadoop Platform on CentOS environment.

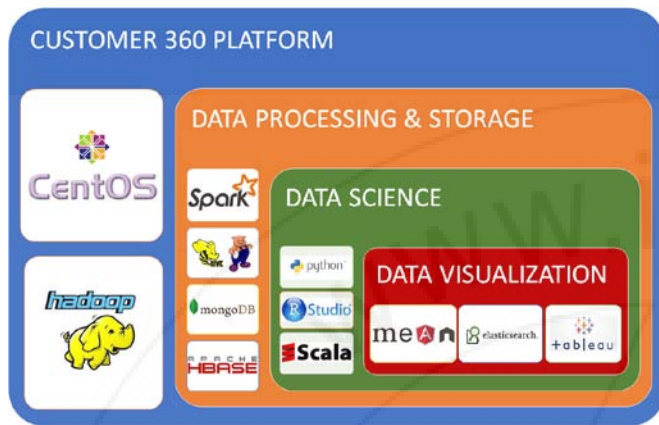


Figure 2: Customer 360 Framework

Data from different data sources are fed in to the platform using various connectors. Data Processing is performed with Map Reduce, Spark etc. Feature extraction and preprocessing of data is performed with the help of Hive and Pig. After processing, data are stored in No SQL databases like mongoDB or HBase. Predictive Modeling and Machine Learning algorithms are applied on the stored data to produce the scores on customer data. Python, R or Scala can be used for training and predicting the scores for the model. Finally data is visualized in real time with the help of streaming, elastic search to index and search the entries in no time. MEAN stack can be used to develop web templates with mongoDB and node.js. Also Tableau can be used to connect scored data, to get visualization of the customer insights.

### 4. Use Case

Customer Service Executive plays a critical role in providing an interface between customers and the organization. Customer service executives use their skills and experience to ensure that a company delivers the highest standards of service to customers.

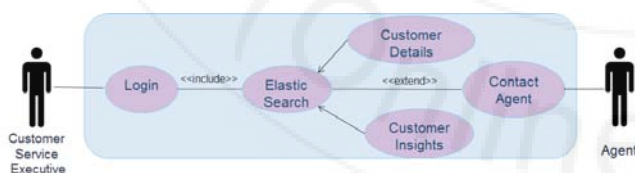


Figure 3: Use Case

### 5. Conclusion

Framework is efficient by leveraging big data tools and data science. We can improve the customer experience with the help of centralized platform, guided analytics and predictive models. Framework can be easily deployed in the production.

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### Author Profile



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