



Architecture Design

AIRBNB DATA ANALYSIS

Rajhans Prasad



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CONTENTS

DOCUMENT VERSION

- ABSTRACT
- INTRODUCTION
- WHY THIS ARCHITECTURE DESIGN DOCUMENT
- ARCHITECTURE DESCRIPTION
- DATA DESCRIPTION
- DATA STORAGE
- DATA VALIDATION
- DATA TRANSFORMATION
- DATABASE OPERATION
- DATA PREPROCESSING
- MODEL TRAINING
- LOAD PRODUCTION MODEL
- CLOUD SETUP
- PUSH APP TO CLOUD
- DATA FROM CLIENT SIDE FOR PREDICTION PURPOSE
- DATA PROCESSING AND PREDICTION
- EXPORT PREDICTION TO CSV



Abstract

AirBnb is an online marketplace that connects people who want to rent out their property with people who are looking for accommodations in specific locales.

Airbnb offers people an easy, relatively stress-free way to earn some income from their property.

These data can be used for various types of analysis depending on the scope of the specific work.

The data-set contains information about the hosts, geographical Availability.



1 Introduction

1.1 Why this Architecture Design Document ?

Any software needs the architectural design to represent the design of software. IEEE defines architectural design as “the process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system.” The software that is built for computer-based systems can exhibit one of these many architectures.

Each style will describe a system category that consists of :

- A set of components (eg: a database, computational modules) that will perform a function required by the system.
- The set of connectors will help in coordination, communication, and cooperation between the components.
- Conditions that how components can be integrated to form the system.
- Semantic models that help the designer to understand the overall properties of the system.

1.2 Scope

Architecture Design Document (ADD) is an architecture design process that follows a step-by-step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the design principles may be defined during requirement analysis and then refined during architectural design work.



2. Architecture Description

Power BI is a business analytics service provided by Microsoft that allows users to analyze and visualize data from a wide variety of sources. Power BI architecture consists of several components that work together to provide a robust, scalable, and secure analytics solution.

Here are the key components of Power BI architecture:

Data Sources: Power BI supports a wide range of data sources, including Excel files, cloud-based and on-premises databases, web services, and many others.

Power BI Desktop: This is a Windows application used to create reports and data models. It allows users to connect to data sources, transform data, and create visualizations.

Power BI Service: This is the cloud-based service used to publish and share reports created in Power BI Desktop. It provides a web interface for accessing reports, sharing and collaborating with other users, and managing data sources and security.

Power BI Mobile: This is the mobile app used to access and view reports on mobile devices.

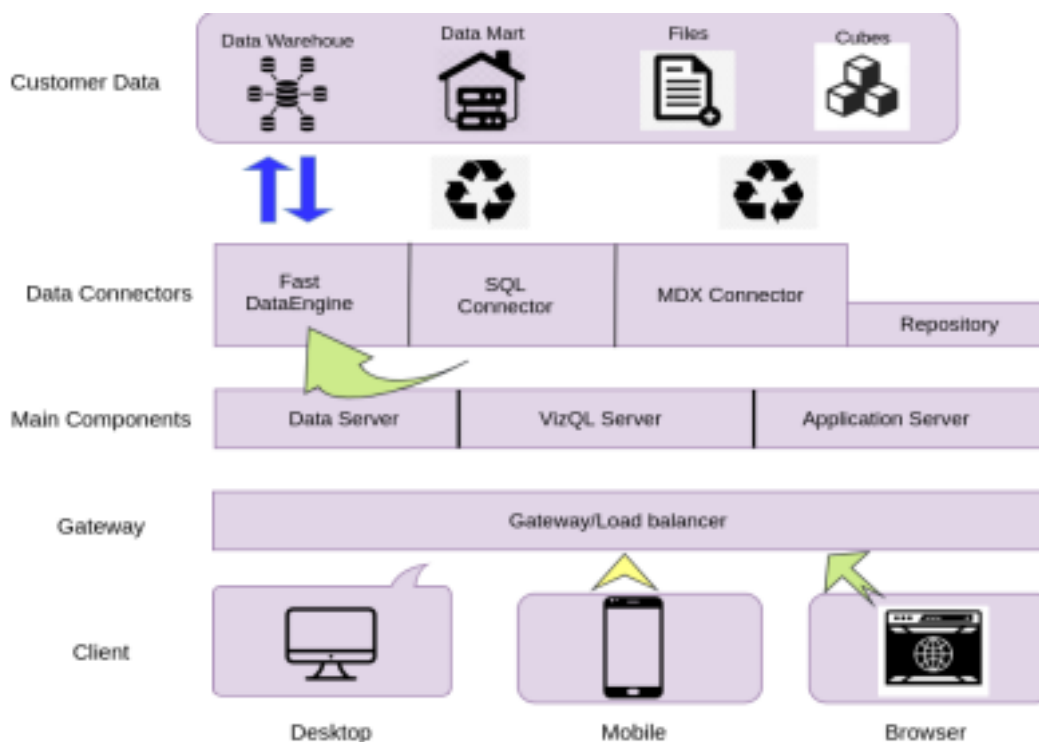
Power BI Gateway: This is a client application that allows Power BI to access on-premises data sources securely. It is installed on a server within the organization's network and acts as a bridge between the Power BI service and the on-premises data sources.

Data Model: This is the structure used to organize and transform data from various sources into a unified format that can be used to create reports and visualizations.

Reports and Dashboards: These are the final outputs of the Power BI solution, created using Power BI Desktop and published to the Power BI service. Reports provide interactive visualizations of data, while dashboards provide a high-level overview of key metrics and trends.

Security: Power BI offers robust security features, including role-based access control, row-level security, and data encryption, to ensure that data is kept secure and confidential. Overall, the Power BI architecture is designed to be flexible, scalable, and secure, allowing organizations of all sizes to gain valuable insights from their data.

2.1 Architecture



The architecture of the Airbnb Data Analysis project encompasses several key components that work together to collect, analyze, and present travelling possibilities and present more unique, personalized way of experiencing the world. While the specific technical details may vary, here is a high-level overview of the project's architecture:

Data Collection: The project relies on a variety of sources to collect data on Airbnb data. Airbnb collects and processes various types of data to provide its services and improve the user experience. The data is gathered through standardized data collection processes and protocols.



Data Processing and Integration: Once collected, the raw data goes through a processing phase where it is standardized, cleaned, and validated. This step ensures consistency and quality in the dataset. The processed data is then

integrated into a centralized database, which serves as the foundation for analysis and reporting.

Analysis and Visualization: Advanced analytical techniques are applied to the integrated dataset to derive insights and identify global travel trends and User Experience. This may involve statistical analysis and other quantitative methods. The results of the analysis are then visualized using interactive charts, graphs to facilitate data exploration and comprehension.

Reporting : The project generates reports, publications, and an online platform to disseminate the findings and insights derived from the data. Reports provide in-depth analysis, while publications offer specialized studies and research papers. The online platform serves as a dynamic repository of data, visualizations, and real-time updates, accessible to a wide range of users



4.Power BI Dashboard Introduction.

Power BI is a business analytics service by Microsoft that provides interactive visualizations and business intelligence capabilities with an interface that is simple enough for end users to create their own reports and dashboards.

Power BI dashboards can be created using a variety of data sources, such as Excel spreadsheets, SQL databases, and cloud-based applications like Salesforce and Google Analytics. Power BI also provides connectors to many other data sources, making it easy to bring in data from multiple sources. Once data is connected, Power BI allows users to create visually appealing and interactive dashboards.

Users can drag and drop visualizations onto the canvas, customize the appearance of the dashboard, and add filters and slicers to allow for interactive exploration of the data.

Power BI dashboards also have a variety of sharing options. Users can share dashboards with others within their organization, publish dashboards to the web, or embed them into websites and other applications.

Power BI also has many advanced features, such as the ability to perform complex data modeling and calculations using DAX formulas, and the ability to create and share reports with others.Overall, Power BI dashboards are a powerful tool for organizations to gain insights into their data, improve decision-making, and drive business success.



5.AirBnb Data Visualization Dashboard.

