High Level Design (HDL) Budget Sales Analysis

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High Level Design (HDL)

Document Version Control

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High Level Design (HDL)

Contents

High Level Design (HDL)

Abstract

Budget and Sales estimates a company's total revenue in a specific period, so they are most important attributes that defines a business's success and failure by focusing on the number of products sold and the price at which they are sold to predict how the company will perform.

To keep a company's profit high it is important to keep track of budget and sales. Wrong budget allocation and ineffective marketing strategies can cause failure of company's business. Therefore, to keep track of budget and sales it is very important to track various features which contribute to increasing sales and to help allocate budget wisely and efficiently.

Thus, a company needs to study these features like customer behaviour, sales pattern, budget track, market friendly products, demands, demography etc to make effective data driven system to achieve business goals.

High Level Design (HDL)

1 Introduction

1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

A. Present all the design aspects and define them in detail
B. Describe the user interface being implemented
C. Describe the hardware and software interfaces
D. Describe the performance requirements
E. Include design features and the architecture of the project
F. List and describe the non-functional attributes like:
    - Security
    - Reliability
    - Maintainability
    - Portability
    - Reusability
    - Application compatibility
    - Resource utilization
    - Serviceability

1.2 Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly technical terms which should be understandable to the administrators of the system.

High Level Design (HDL)

2 General Description

2.1 Product Perspective & Problem Statement

Housing prices are an important reflection of the economy, and housing price ranges are of great interest for both buyers and sellers. In this project, house prices will be predicted given explanatory variables that cover many aspects of residential houses.

The objective of the project is to perform data visualization techniques to understand the insight of the data. This project aims apply various Business Intelligence tools such as Tableau or Power BI to get a visual understanding of the data.

2.2 Tools used

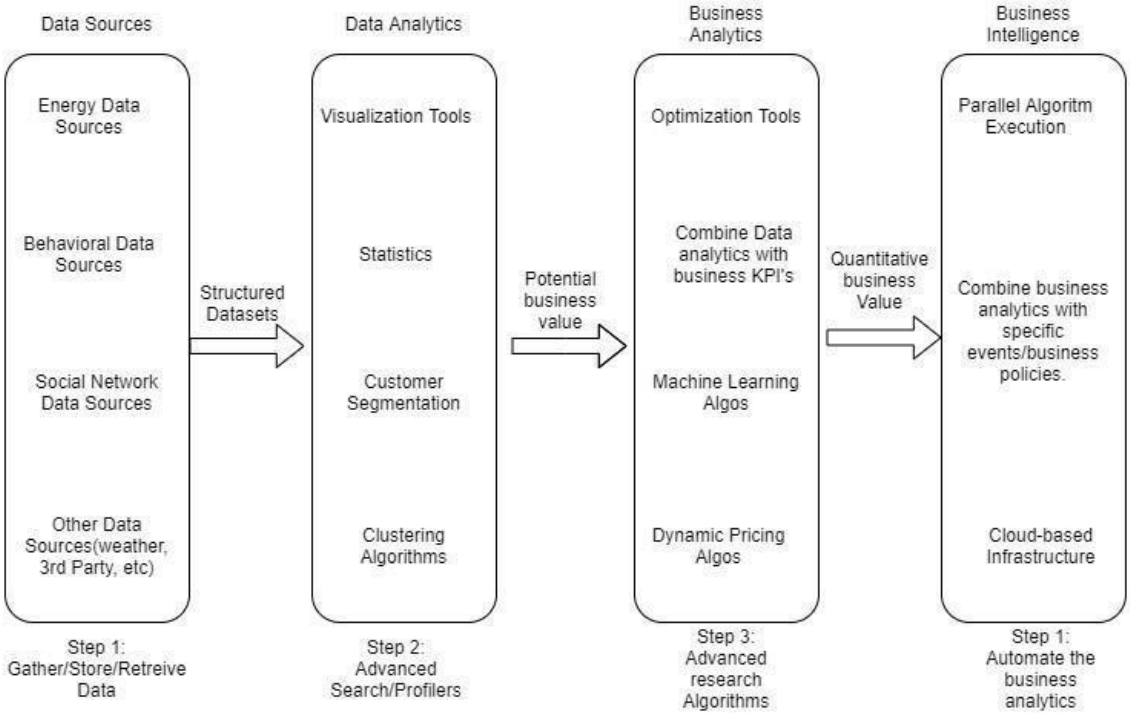
Business Intelligence tools and libraries works such as Python, NumPy, Pandas, Matplotlib, Seaborn, Excel, Jupyter Notebook, Tableau, Power BI are used to build the whole framework.

High Level Design (HDL)

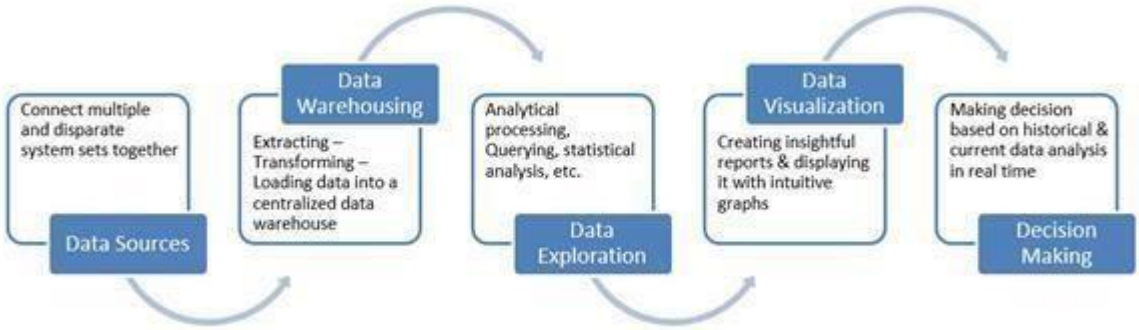
3 Design Details

3.1 Functional Architecture

Functional Architecture of Business Architecture:



How Business Intelligence Work:



3.2 Optimization

Your data strategy drives performance

- Minimize the number of fields
- Minimize the number of records
- Optimize extracts to speed up future queries by materializing calculations, removing columns and the use of accelerated views

Reduce the marks (data points) in your view

- Practice guided analytics. There's no need to fit everything you plan to show in a single view. Compile related views and connect them with action filters to travel from overview to highly granular views at the speed of thought.
- Remove unneeded dimensions from the detail shelf.
- Explore. Try displaying your data in different types of views.

Limit your filters by number and type

- Reduce the number of filters in use. Excessive filters on a view will create a more complex query, which takes longer to return results. Double-check your filters and remove any that aren't necessary.

- Use an include filter. Exclude filters load the entire domain of a dimension, while include filters do not. An include filter runs much faster than an exclude filter, especially for dimensions with many members.

- Use a continuous date filter. Continuous date filters (relative and range-of-date filters) can take advantage of the indexing properties in your database and are faster than discrete date filters.

- Use Boolean or numeric filters. Computers process integers and Booleans (t/f) much faster than strings.

- Use **parameters** and **action filters**. These reduce the query load (and work across data sources).

High Level Design (HDL)

Optimize and materialize your calculations

- Perform calculations in the database
- Reduce the number of nested calculations.
- Reduce the granularity of LOD or table calculations in the view. The more granular the calculation, the longer it takes.
  - LODs - Look at the number of unique dimension members in the calculation.
  - Table Calculations - the more marks in the view, the longer it will take to calculate.
- Where possible, use MIN or MAX instead of AVG. AVG requires more processing than MIN or MAX. Often rows will be duplicated and display the same result with MIN, MAX, or AVG.
- Make groups with calculations. Like include filters, calculated groups load only named members of the domain, whereas Tableau's group function loads the entire domain.
- Use Booleans or numeric calculations instead of string calculations. Computers can process integers and Booleans (t/f) much faster than strings.
  Boolean > Int > Float > Date > DateTime > String.

4 KPIs

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators for the disease.

As and when, the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors.

4.1 KPIs (Key Performance Indicators)

Key indicators displaying a summary of the Sales generation and its relationship with different metrics:

High Level Design (HDL)

1. Customers Distribution by Age, Martial Status, Total Children
2. Customer and Sales Relation
3. Sales and Customers Distribution based on Countries and Commute Distance
4. Category and Sub-Category wise Distribution of Sales
5. Customers and Sales Distribution by Education, Occupation
6. Yearly Income of Customers and Sales
7. Profit and Budget Analysis

5 Deployment

Prioritizing data and analytics couldn't come at a better time. Your company, no matter what size, is already collecting data and most likely analyzing just a portion of it to solve business problems, gain competitive advantages, and drive enterprise transformation. With the explosive growth of enterprise data, database technologies, and the high demand for analytical skills, today's most effective IT organizations have shifted their focus to enabling self-service by deploying and operating Tableau at scale, as well as organizing, orchestrating, and unifying disparate sources of data for business users and experts alike to author and consume content.