iNeuron

High Level Design (HLD)

E-commerce Analytics Dashboard

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11th August 2021	1.0	First Version of Complete HLD	Satyam Nathoo

Contents

The Analytics team of an Online E-Commerce Company wants to design a Sales dashboard to analyze the sales based on various product categories. The company wants to add user control for product categories, so users can select a category and can see the trend month-wise and product-wise accordingly.
The Analytics team also wants to create a histogram to analyze the number of shipping days.

Abstract

E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business.

The Analytics team of an Online E-Commerce Company wants to design a Sales dashboard to analyze the sales based on various product categories. The company wants to add user control for product categories, so users can select a category and can see the trend month-wise and product-wise accordingly. The Analytics team also wants to create a histogram to analyze the number of shipping days. The company's database keeps track of the following data fields: Brand Name, Company Name, Disease Medical Use, Invoice date, Company code, Shipto-Country, Ship-to-Country Full Name, Sold-to party- Code, Sold-to party Country, Soldto party Country Full Name, Delivery Plant, Payment terms, External Agent, Sales quantity, Price TC /Kg, Revenue, External commissions, Month.

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:

- Present all of the design aspects and define them in detail

- Describe the user interface being implemented

- Describe the hardware and software interfaces

- Describe the performance requirements

- Include design features and the architecture of the project

- 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.

2 General Description

2.1 Product Perspective & Problem Statement

E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business.

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2.2 Tools used

Business Intelligence tools and features such as MS Excel 2016,Formulas,Charts are used to build the whole framework.
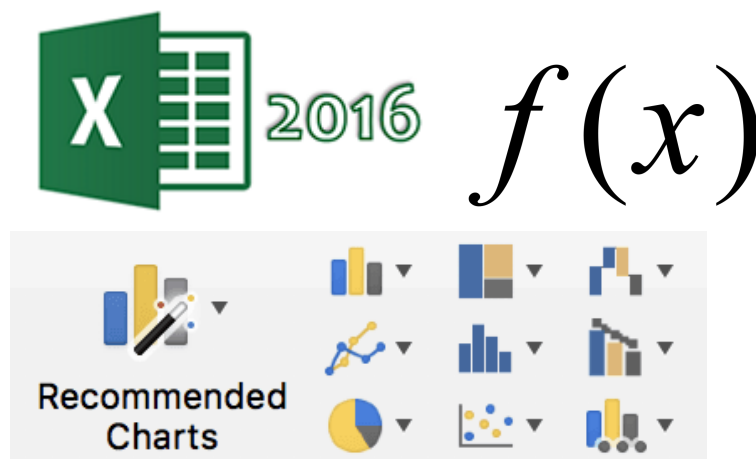
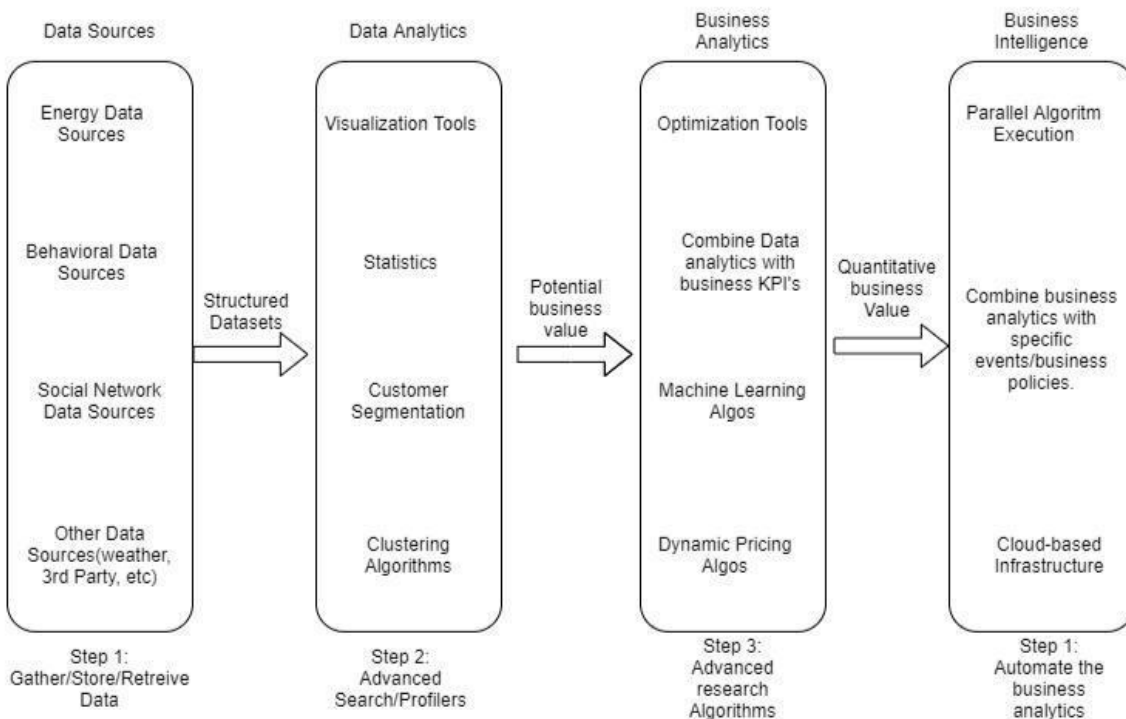# 3 Design Details
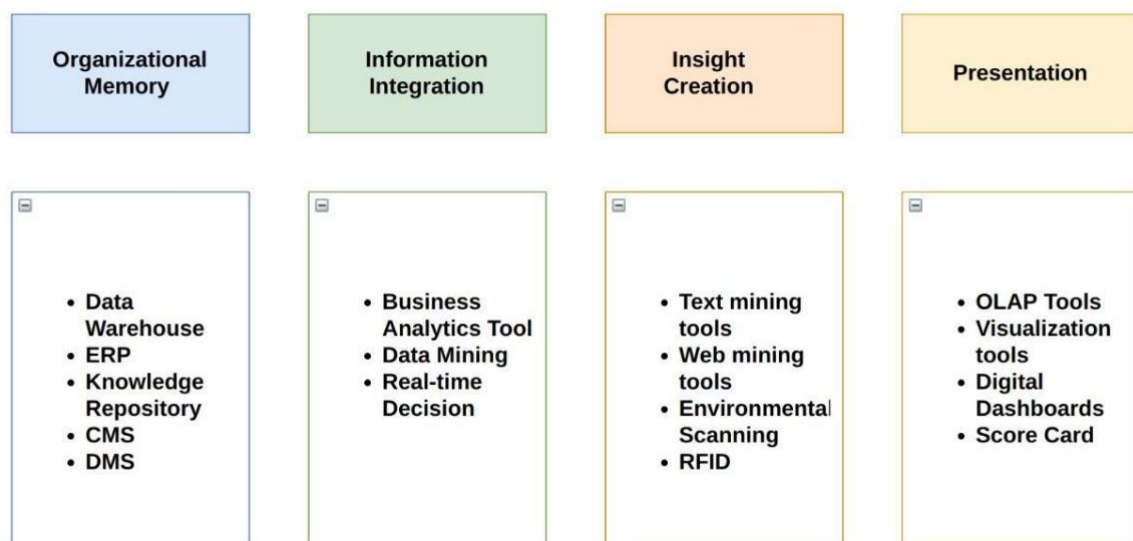
3.1 Functional Architecture

Figure 1: Functional Architecture of Business Intelligence

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

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.

   o LODs - Look at the number of unique dimension members in the calculation.

   o 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.

- <u>Use Booleans or numeric calculations instead of string calculations</u>. 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.
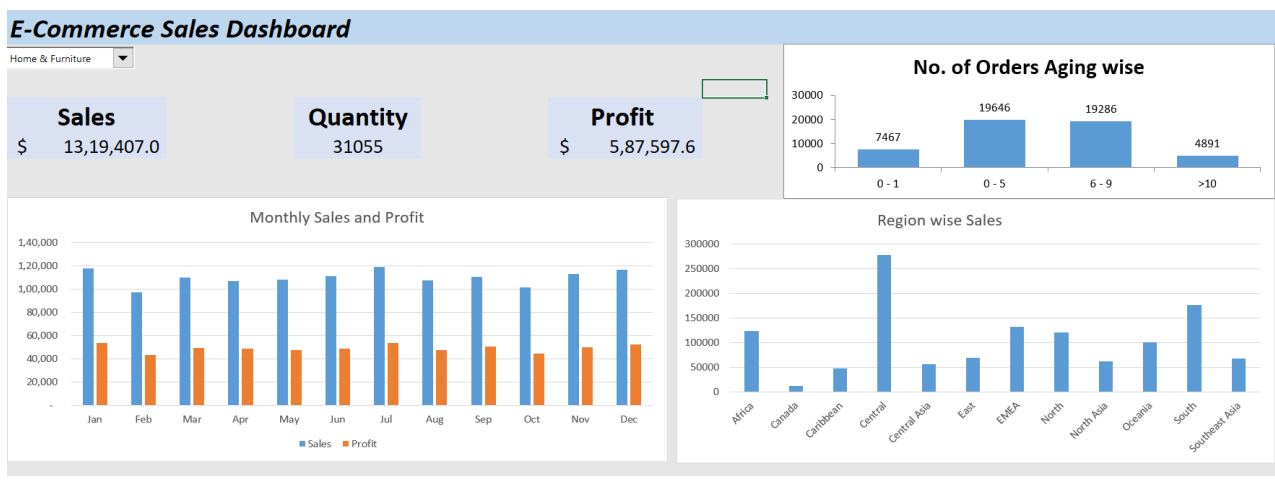
As and when, the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors

4.1 KPIs (Key Performance Indicators)

Key indicators displaying a summary of the Sales & Profit and its relationship with different metrics

1. Impact of Product Categories on Sales,Quantity and Profit

2. Impact of Year/Month on Sales & Profit.

3. Influence of Region parameter on Sales.

4. Influence of No. of Orders Aging wise parameter on Sales

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 developing Automated Dashboards in Excel using Macros and VBA at scale, as well as organizing and unifying disparate sources of data for business users and experts alike to author and consume content.