

High Level Design (HLD)
WORLD BANK DEBT ANALYSIS

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ABSTRACT

It's not that we humans only take debts to manage our necessities. A country may also take debt to manage its economy. The World Bank Debt Analysis project was created to provide developing countries with a reliable and up-to-date source of information on their external debt. The project focuses on providing data and analysis on the trends and patterns in external borrowing, including the terms and conditions of debt contracts. The ultimate goal of the project is to help policy-makers in developing countries make informed decisions on their borrowing and debt management strategies. We are created some visual dashboard and total debt by all countries taken throughout last 60 years.

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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:
 - o Security
 - o Reliability
 - o Maintainability
 - o Portability
 - o Reusability
 - o Application compatibility
 - o Resource utilization
 - o 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.

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2. General Description

The World Bank attributes the increase in debt ratios to a number of factors, including the global financial crisis, which led to a decline in export revenues and an increase in borrowing costs. Other factors include population growth, natural disasters, and the expansion of social safety nets.

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 Power BI

or Power BI to get a visual understanding of the data.

2.1 TOOLS USED

Business Intelligence tools and libraries works such as Excel, Power BI are used to build the whole framework

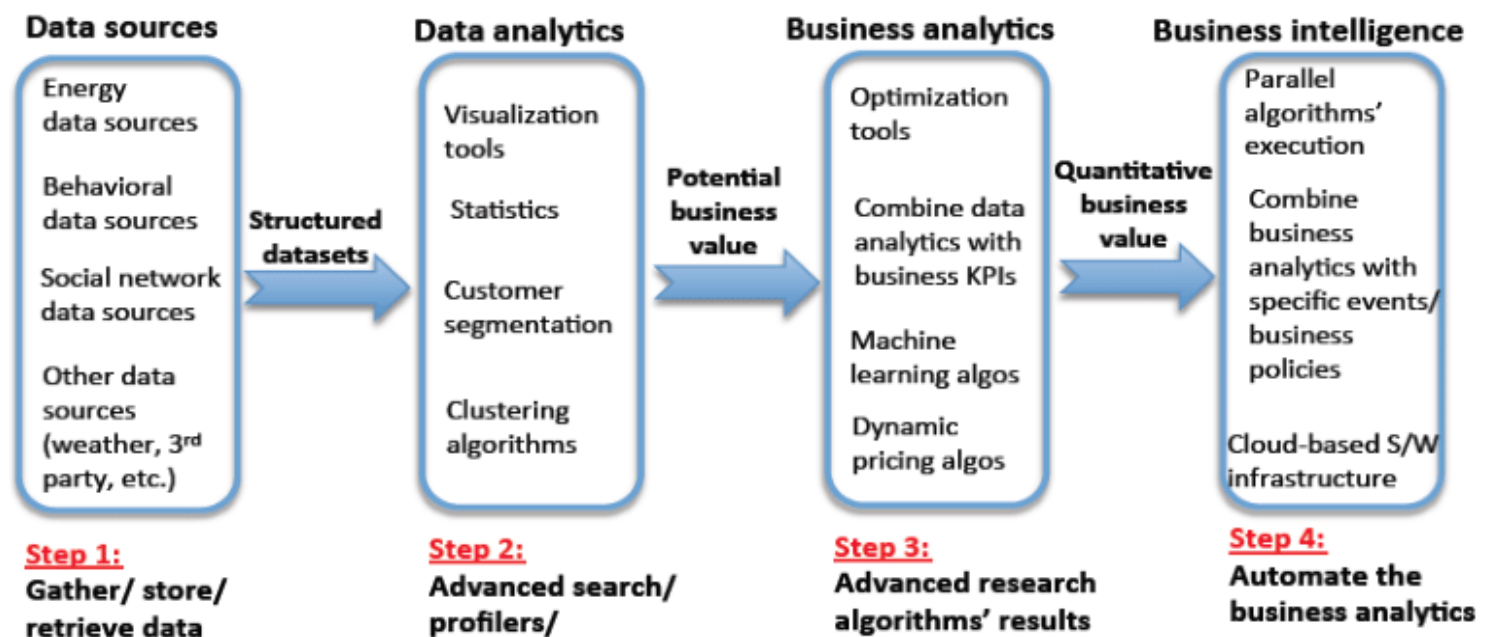


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3.DESIGN DETAILS

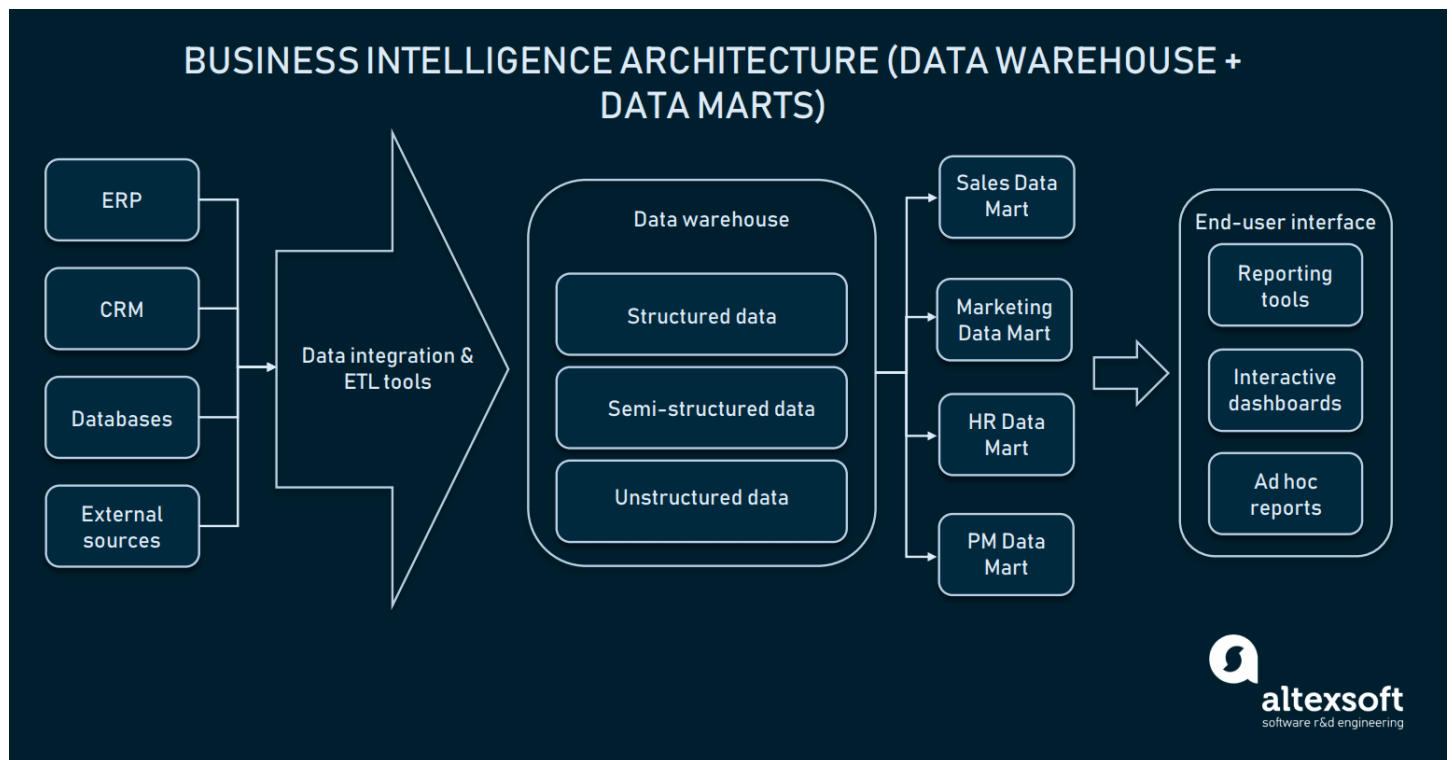
3.1 Functional Architecture



FUNCTIONAL ARCHITECTURE OF BUSINESS INTELLIGENCE

HOW BI REALLY WORKS

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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.

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- 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).

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 Power BI'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>Date Time>String

4.KPI

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

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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 KPI'S (KEY PERFORMANCE INDICATORS)

Key indicators displaying a summary of the International Debt and its relationship with different metrics.

1. Impact of financial health of countries.
2. Tracking progress of debt reduction programs.
3. Understand different countries debt management strategies.
4. Revenue growth of country.
5. Countries with Highest and lowest debt.

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 analysing 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

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self-service by deploying and operating Power BI at scale, as well as organizing, orchestrating, and unifying disparate sources of data for business users and experts alike to author and consume content.

Power BI prioritizes choice in flexibility to fit, rather than dictate, your enterprise architecture. Power BI Server and Power BI Online leverage your existing technology investments and integrate into your IT infrastructure to provide a self-service, modern analytics platform for your users. With on-premises, cloud, and hosted options, there is a version of Power BI to match your requirements. Below is a comparison of the three types.

Power BI Server – On Premise

- Its release cycle once every 4 months
- Real time streaming not possible
- Connect services like salesforce
- Custom visualizations can be rendered using the Power BI Report Server.
In addition to the basic customizations, almost 100 new ones were introduced.
- Cannot Create reports in browser
- RLS is available Direct Query (data source) and Import mode.

Power BI Server – Public Cloud

- Its release cycle once in a month.
- Real time streaming possible
- Connect services like salesforce
- The platform has a range of preset templates that can be used by various organizations depending on their needs. Furthermore, it allows comprehensive customization of its templates to address the requirements of report or dashboard generation.
- Can create reports in browser
- RLS is available Direct Query (data source) and Import mode.

Power BI (SaaS)

- Customized dashboards that enable business users to create and share live data visualizations.
- Connect services like salesforce
- Can access various sources of data such as Excel, CSV, SQL Server, Web files to create interactive visualization
- Software as a service (SaaS) allows users to connect to and use cloud-based apps over the Internet. (email, calendaring, and office tools such as Microsoft Office 365)
- Ability to run via an internet browser 24/7 from any device.