ARCHITECTURE DESIGN DOCUMENT FOR ANALYZE DEBT STATISTICS

DOCUMENT VERSION CONTROL

Date Issue	Version	Description	Author
09/03/2023	1	Initial Architecture – V 1.0	Abdul Jaweed
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CONTENT

ABSTRACT

It's not that we humans only take debts to manage our necessities. A country may also take debt to manage its economy. For example, infrastructure spending is one costly ingredient required for a country's citizens to lead comfortable lives. The World Bank is the organization that provides debt to countries.

In this project, you are going to analyze international debt data collected by The World Bank. The data-set contains information about the amount of debt (in USD) owed by developing countries across several categories.

INTRODUCTION

WHY THIS ARCHITECTURE DESIGN DOCUMENT ?

Any software needs the architectural design to represent the design of the 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 help the designer to understand the overall properties of the system

SCOPE

Architecture Design Document (ADD) is an architectural 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.

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.

ARCHITECTURE

International Debt Statistics is a database and publication that presents debt statistics for countries around the world. The architecture of this database and publication can be broken down into several components:

Data Sources: The data for International Debt Statistics is sourced from a variety of international organizations, including the World Bank, the International Monetary Fund (IMF), and the Organization for Economic Cooperation and Development (OECD). These organizations collect data from national statistical agencies, central banks, and other sources.

Data Collection and Management: The data collected from various sources are processed and managed using standardized procedures to ensure consistency and comparability. The data are subjected to quality control checks and validation to ensure accuracy and reliability.

Data Aggregation and Analysis: The collected and managed data are aggregated and analyzed to produce summary statistics and indicators on various aspects of external debt, including the composition of debt, the level of debt, debt service payments, and debt sustainability.

Data Visualization and Dissemination: The statistics and indicators are presented in various formats, including tables, charts, and maps, and are disseminated through the World Bank's website and other channels. The data can also be accessed and downloaded in various formats to enable further analysis and research.

Overall, the architecture of International Debt Statistics involves a complex process of data collection, management, aggregation, analysis, visualization, and dissemination, which requires expertise in data management, economics, and international finance.

POWER BI DASHBOARD

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.

INTERNATIONAL DEBT STATISTICS VISUALIZATION DASHBOARD