IST722: Unit 02 Class Exercise

This is an individual assignment.

Before you begin, please make sure you've read and understand 1) our class honor code, 2) course policies on late work and 3) participation policies as posted on the syllabus. "I didn't know" is not an excuse.

You should cite your sources in a standard format like MPA or APA and include a list of works cited.

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Instructions

Answer each of the following questions as concisely as possible. More is not necessarily better. Please justify your answer by citing your sources from the assigned readings from our textbooks, our class lectures, or online if directed to do so. Be sure to cite in text and include a list of works cited. Place your answer below each question. When you're finished, print out this document and bring it to class as part of your participation grade.

Questions

[1] What is the difference between Systems Architecture and Technical Architecture. Can you provide one example of each?

Ans. Technical Architecture is also known as Logical Architecture shows how the data stores are arranged in the data warehouse and how data moves from one data store to another. It is also called Data Flow Architecture. Example of Technical Architecture is the flow of information from an ERP system by an ETL process to a data warehouse in an organization.
System Architecture is an infrastructure of hardware and software to facilitate the technical architecture based on the organizational needs. It consists of physical configuration of systems, networks and servers to assist technical architecture. Example would be PeopleSoft ERP Oracle 12c which can be used to store customer information.

[2] What are the 4 types of data stores found in technical architectures?

Ans. Data stores can be Big Data such as Hadoop HDFS, file systems, web services, mainframes anywhere where there is information available and the data is at rest. Four types of Data Stores in Technical Architecture are:

1. **Internal:** used by the warehouse which is not open and cannot be accessed by users. E.g. Staging
2. **User facing:** available to end users which can be accessed directly by users. E.g. Web services
3. **External:** not a part of the warehouse. E.g. Logs of system
4. **Hybrid:** combination of user facing and internal. E.g. Tableau Database

[3] List and explain the 5 technical architectures discussed throughout the coursework.

Ans. The five technical architectures:

1. Independent data marts
It is the least complex architecture with source system and one or more DDS system which is a separate entity. It can be done independently however; it is difficult to mature the data warehouse as not much integration can be done between data marts. It is departmentalized and lacks enterprise focus and data is sources independently for each data mart.

2. Centralized
It is similar to independent data mart except all the data marts are consolidated in a single data store. They are consolidated in a single DDS however; they still lack integration among dimensions and there are copies of dimension for each data mart. It is better than independent architecture but still not the ideal technical architecture.

3. Enterprise bus architecture
All the dimensions from DDS store are reused across the data marts so that there is a single dimension for master data. It is ideal but difficult to achieve as enterprise focus is required to build data mart. This is also the Kimball technical architecture. Enterprise Bus with ODS- It is variation to the enterprise bus includes an ODS for reporting current data.
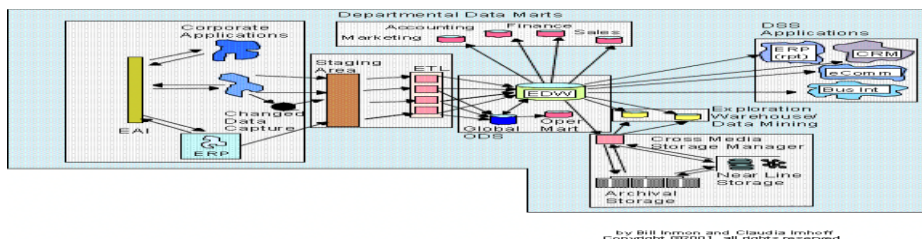
4. Hub and spoke
Data lies in the NDS which is single version of the truth which is sent to DDS as and when needed. Dimensional models in data marts are distributed and sourced from the NDS. The data is normalized but has reduced complexity of conformed dimensions. Data stored in NDS can be used for other purposes as well rather than only dimensional data stores. An ODS can be added to consolidate data at particular time from NDS.

5. Federated
It is complex architecture which is used when there are several data warehouses which are used for mergers and acquisitions. It can be done with ETL and EII. ETL unifies different sources into a single federated data warehouse. It can be used to integrate existing data marts, warehouses and applications into a single data warehouse.

[4] Is the Corporate Information Factory a technical architecture? Explain.

Ans. Yes, the Corporate Information Factory is the Hub and Spoke technical architecture. It has an enterprise data warehouse at the center as the hub and the departmental data marts are the data marts which are the spokes. The image shows the flow of data from one data store to another. Cylinders are data marts.

WORKS CITED:
1. Technical Architecture Whitepaper
2. Professor Humayun Friday lecture explanations and image is from slides
3. Professor Fudge videos
4. 5technicalArchitectures_SMA_PPT