Module 4:Requirements Analysis and Modelling

Week 4

Learning Outcomes:
After completing this course, you are expected to demonstrate the formal languages:

- *Determining the system requirements through consultation with stakeholders from system documents, domain knowledge, and market Studies*

A. Engage

Trivia:Data are characteristics or information, usually numerical, that are collected through observation.

Figure 1: Types of Data

B. Explore

YouTube Link: https://www.youtube.com/watch?v=lV1s5NQWN_A

Video Title: **Process of Data Analytics**

C. Explain

Methods of Data Analysis

Introduction

A Data Model and analysis is a description of how data should be used to meet the requirements given by the end user. Data modeling helps to understand the information requirements. It differs according to the type of the business, because the business processes or each sector is different, and it needs to be identified in the modeling stage. Data Modeling process starts with requirements gatherings.

D. Elaborate

Data Modeling

A Data Model consists of three different phases those are Structural Part consisting a set of rules, Manipulating Part it is a type operation allowed, such as updating, retrieving and changing the database and Integrity Part which is validated the accuracy of data.

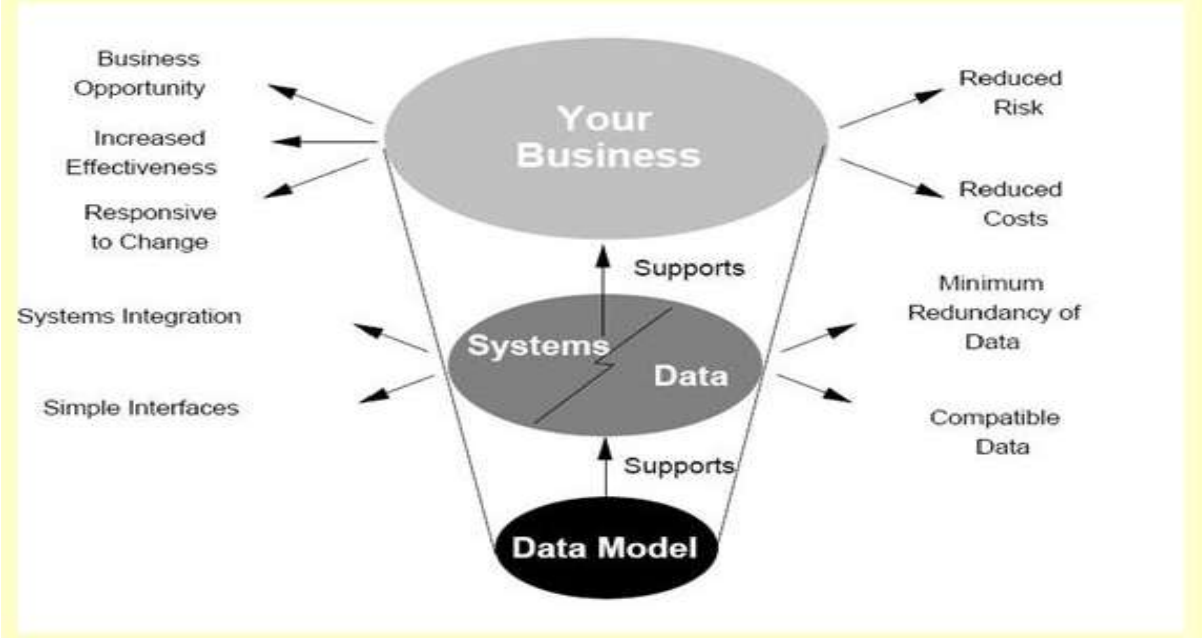

Figure 2: West & Fowler has identified may benefits of a data model. Above figure depics the details of these benefits of using a data model.

There are Four types of Data Models

Conceptual Data Models it is Highest-level relationships between different entities. **Enterprise Data Models** Addresses unique requirements of a specific business. **Logical Data** Modeling it illustrates the specific entities, attributes, and relationships involved in a business function. This serves as the basis for the creation of the physical data model. **Physical Data Modeling**itrepresent an application and database-specific implementation of a logical data model.

Conceptual Data Models

According to Hoffer et al. Conceptual data model is a representation of organizational data. The purpose of a conceptual data model is to show as many rules about the meaning and interrelationships among data as are possible. Conceptual data modeling is typically done in parallel with other requirement analysis and structuring steps during system analysis. This is carried out throughout the systems development process. This is useful for both planning and analysis phases in the systems development life cycle. Conceptual data model contains

about10 - 20 entities and relevant relationships known as group entities. Conceptual data modeling is the most crucial stage in the database design process. Peter Chen states entity relationship model as a "Pure Representation of reality"

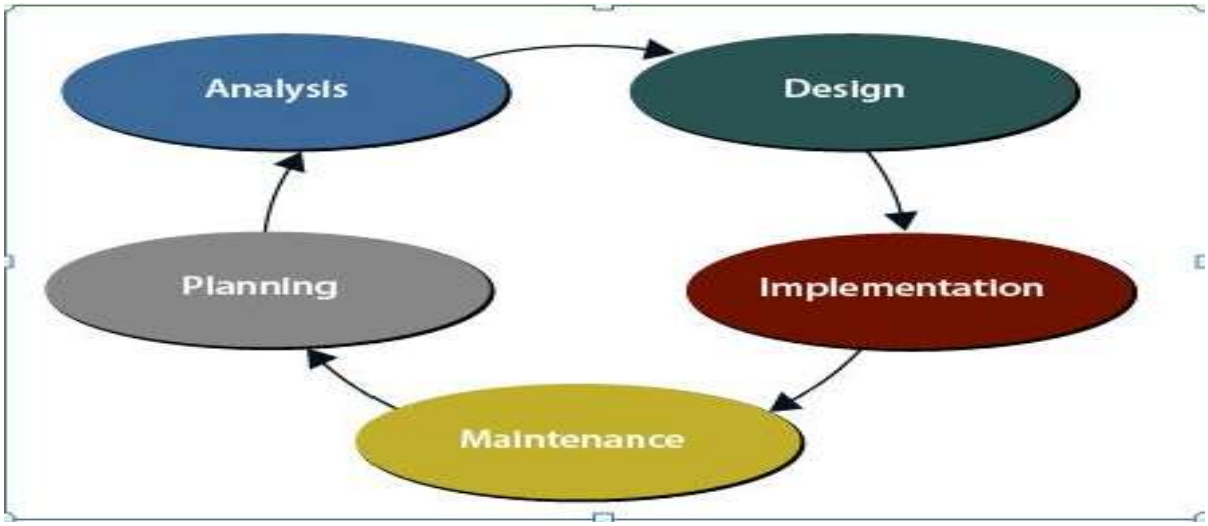

Figure 3:Conceptual Data Models Process

Enterprise Data Model (External Data Model)

An Enterprise Data Model is an integrated view of the data produced and consumed across an entire organization. It incorporates an appropriate industry perspective. An Enterprise Data Model (EDM) represents a single integrated definition of data, unbiased of any system or application. It is independent of "how" the data is physically sourced, stored, processed or accessed. The model unites, formalizes and represents the things important to an organization, as well as the rules governing them.

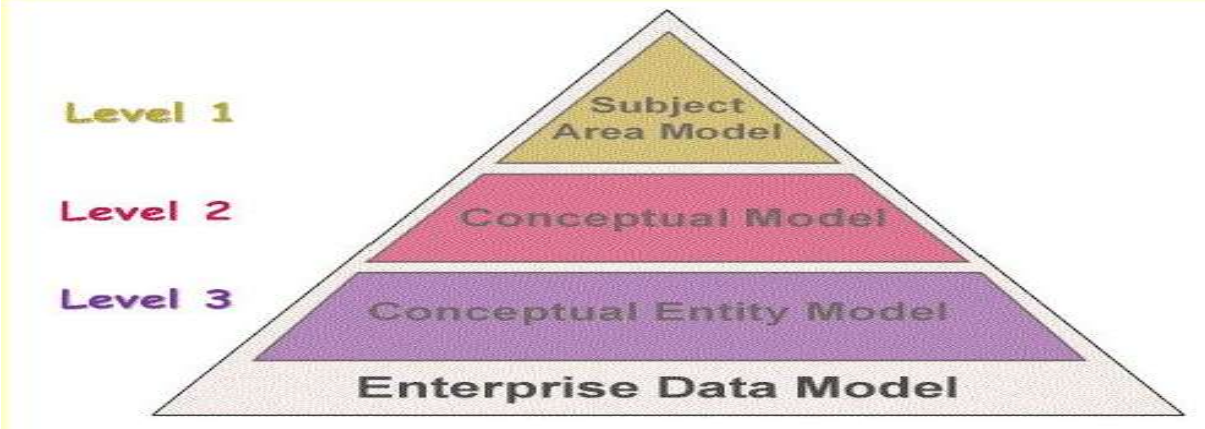

Figure 4:Enterprise Data Modeling Structures

Logical Data Model

The logical data model is an evolution of the conceptual data model towards a data management technology such as relational databases. Actual implementation of the conceptual model is called a logical data model. To implement one conceptual data model may require multiple logical data models. Data modeling defines the relationships between data elements and structures.

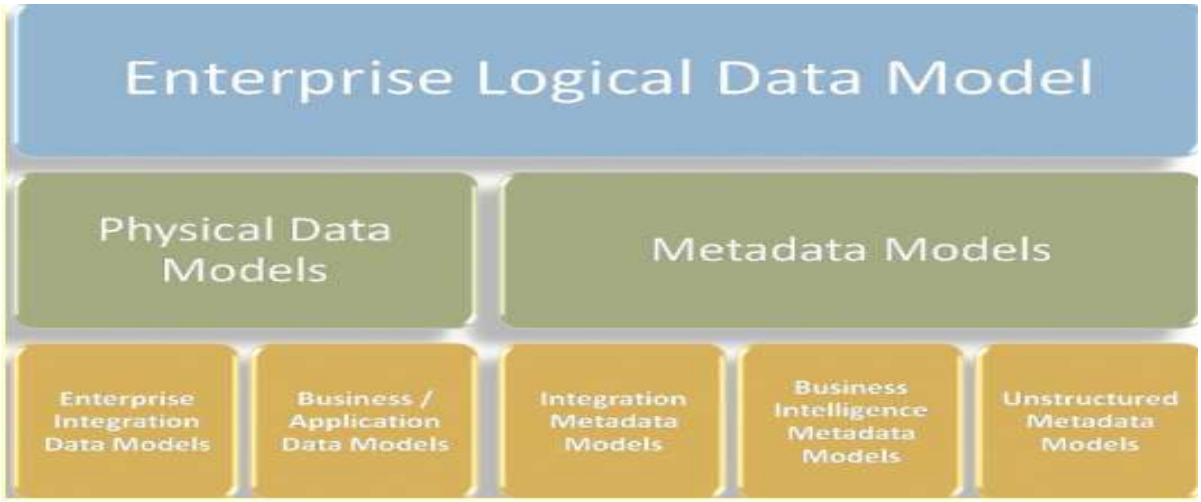

Figure 5:Logical Data Model

Physical Data Model

Physical data model is a representation of a data design which takes into account the facilities and constraints of a given database management system. Physical data model represents how the model will be built in the database. A physical database model shows all table structures, including column name, column data type, column constraints, primary key, foreign key, and relationships between tables.

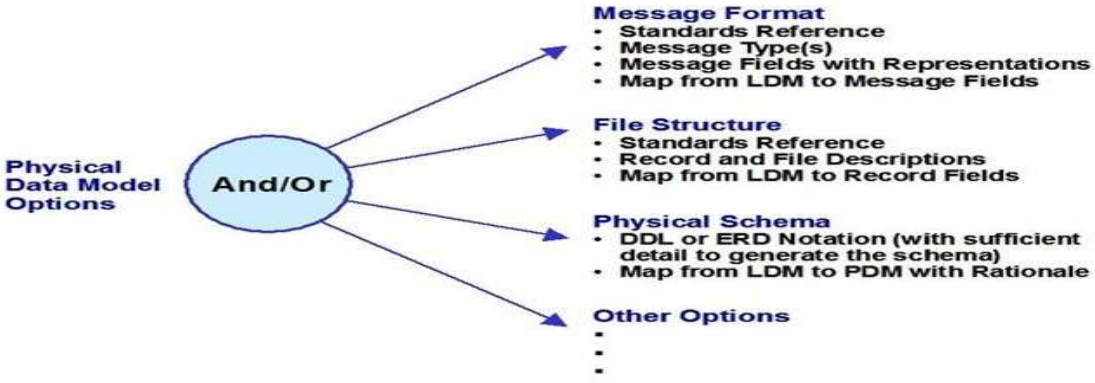

Figure 6:Physical Data Model

E. Evaluation

ASSESSMENT:
Instruction: may use google forms for questionnaire composition, and share link to correspondents. Possible time allocation 20mins – 30mins.

CONTENT FOR ASSESSMENT: 15 PTSEACH

1. Explain the Conceptual Data Models.
2. Explain the Diagram of Logical Data Model.

Reference:

https://www.umsl.edu/~sauterv/analysis/Fall2010Papers/varuni/

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