**Module 3:Requirements Analysis and Modelling**

**Week 3**

**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:Peter Pin-Shan Chen** (Chinese: 陳品山; born in 1947) is a Taiwanese American computer scientist. He is a distinguished career scientist and faculty member at Carnegie Mellon University, who is known for the development of the entity-relationship model in 1976.

**Peter Pin-Shan Chen**

## B. Explore

YouTube Link: https://www.youtube.com/watch?v=5FeeXkiJgTk

Video Title: **Introduction to Requirement Modeling**

## C. Explain

### Requirements Analysis and Modeling

#### 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

Data Modeling is the act of exploring data-oriented structures. This can be used for variety of purposes. On of the important functions of data modeling is that; it helps to understand the information requirements. Especially this makes both developers and end users lives easier. As mentioned above data modeling helps the end users to define their requirements and the developers are able to develop a system to meet those specified requirements

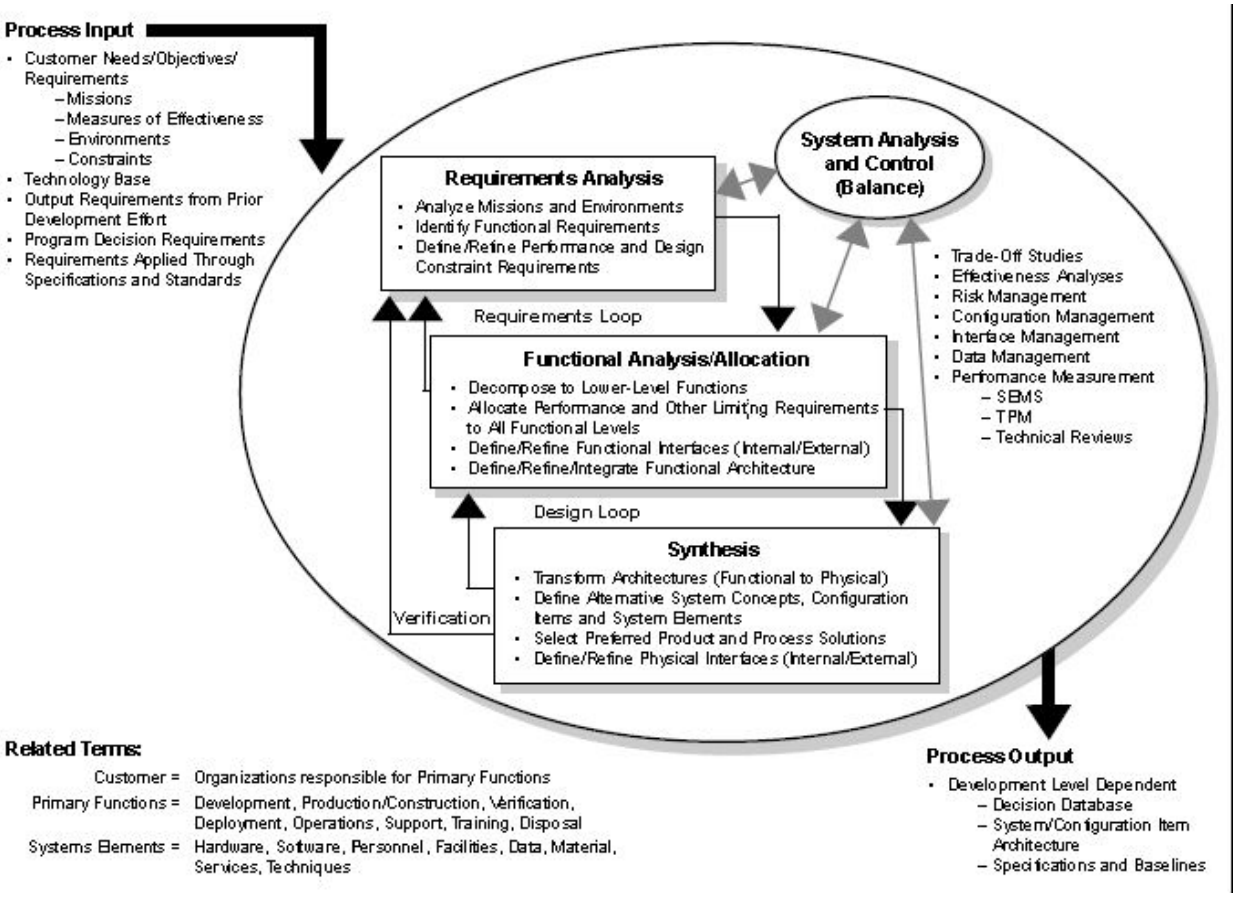


**Figure 1: The Systems Engineering Process**

Data Model is a conceptual representation of data structures required for a database and is very powerful in expressing and communicating the business requirements Learn Data Modeling. It visually represents the nature of data, business rules that are applicable to data, and how it will be organized in the database. There are three main designs for data model, namely conceptual design, logical design and the physical design. Data Model is used by booth functional team and the technical team in a project. Functional team consists of the business analysts and the end users and the technical team consists of the developers

and the programmers. There are data modelers who are responsible for designing the data model which meets the expectations of the functional team and provide requirements for the technical team.

**History of Data Models**

In 1970s, Peter Chen invented and introduced the entity-relationshipmodeling technique. In 1980s the object modeling techniques startedapplying to representing information requirements of an organization.Then the unified modeling language (UML) was introduced to replace theobject modeling methods.

**Data Modeling Process**

Data modeling process starts with analyzing the situation. Here theanalysts are able to gather requirements, when designing a proper data model, it's important to communicate with the stakeholders about therequirements. Data modeling is the act of exploring data-oriented structures, which can be used for multiple purposes. Mainly datamodeling is a communication tool among users, which considers as theblue print of the database system.

**Data Analysis**

The techniques of data analysis can impact the type of data modelselected and its content. For example, if the intent is simply toprovide query and reportingcapability, a data model thatstructures the data in more of a normalized fashion would probablyprovide the fastest and easiest access to the data. Query and reportingcapability primarily consist of selecting associated data elements,perhaps summarizing them and grouping them by some category, andpresenting the results. Executing this type of capability typicallymight lead to the use of more direct table scans. For this type ofcapability, perhaps an ER model with a normalized and/or denormalizeddata structure would be most appropriate.

**E. Evaluation**

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

CONTENT FOR ASSESSMENT: 5 PTSEACH

1. Distinguish between Data and System.
2. What is Process
3. What is Software?
4. What is Data Model?
5. Briefly Explain Data Modeling Process.

**Reference:**

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

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