GOVERNMENT OF ANDHRA PRADESH

COMMISSIONERATE OF COLLEGIATE EDUCATION

SOFTWARE REQUIREMENT ANALYSIS

Software Engineering

Computer Science

Smt. G.Sumalatha MTech,(PhD)

Govt. Degree College , Salur

Email. Id : sumalathagopathoti@gmail.com

Objectives

- Describe requirement Analysis.
- Describe various types of requirement model.
- Explore requirement model objectives and philosophy.
- Explain analysis rules of thumb.
- Describe domain analysis.

Requirement Analysis

- It is used to elaborate basic requirements of established during inception and elaboration tasks through modeling.
- Requirement analysis
  - Specify software operational characteristics.
  - Indicates software interface with other elements.
  - Establish constraints that the software must meet.
- Requirement modeling can be done with set of models.

Requirement Model

- Scenario-based models of requirements from the point of view of various system "actors".
- Data models that depict the information domain for the problem.
- Class-oriented models that represent object-oriented classes and the manner in which classes collaborate to achieve system requirements.
- Flow-oriented models that represent the functional elements of the system and how they transform data as it moves through the system.
- Behavioural models that depict how the software behaves as a consequence of external "events".

Overall Objectives and Philosophy

- Throughout requirements modelling, our primary focus is on what, not how.
  - What user interaction occurs in a particular circumstance?
  - what objects does the system manipulate?
  - what functions must the system perform?
  - what behaviours does the system exhibit?
  - what interfaces are defined?
  - what constraints to apply?

Overall Objectives and Philosophy

- Requirements analysis and modelling follows iterative approach.
- Customers unsure of what is needed and developer unsure what approach will give good performance.
- The requirements model must achieve three primary objectives:
  - To describe what the customer requires.
  - To establish a basis for the creation of a software design
  - To define a set of requirements that can be validated once the software is built

Overall Objectives and Philosophy

- The requirements model acts as a bridge between the system description and the design model.

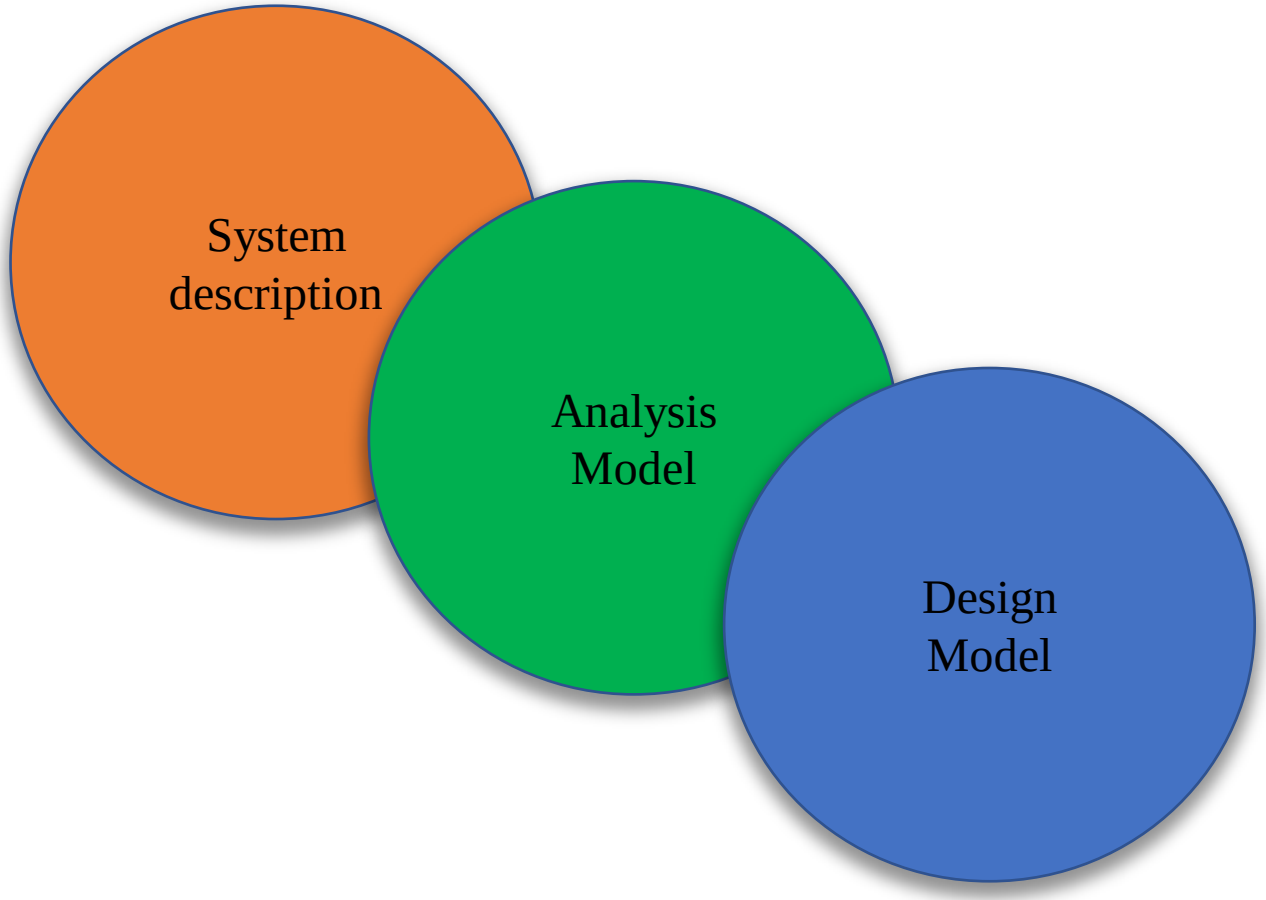

Figure: Requirement Model

Analysis Rules of Thumb

- The model focuses on the requirements that are visible in the business domain.
  - The level of abstraction must be high, don’t try to explain how it works.
- Every element in the model should give overall understanding of the software requirements and focus on the data, function and behaviour of the system.
- Delay consideration of infrastructure and other non-functional models until design.
  - Specify what database is required
  - Don’t consider classes to implement it and functions to access database.
  - The behaviour of database not initially required.

Analysis Rules of Thumb

- Minimize coupling throughout the system.
  - There should be interaction among classes and functions, if that interaction is high, we have to reduce it.
- The model should give value to all the stakeholders participated in that model.
  - Business stake holders use the model for to validate requirements.
  - Designers use this model as base for the design model.
  - QA people use this model to plan for test cases.
- Keep the model as simple as it can be.
  - Don’t use additional diagrams if they add no new information.

Domain Analysis

- Domain analysis defines the analysis patterns , categorise them and make them ready to use.
- Software domain analysis is the identification, analysis, and specification of common requirements from a specific application domain.
- The role of the domain analyst is to discover and define analysis patterns, analysis classes, and related information that may be useful for similar applications.
- Sources of domain knowledge are surveyed to identify objects that can be reused across the domain.

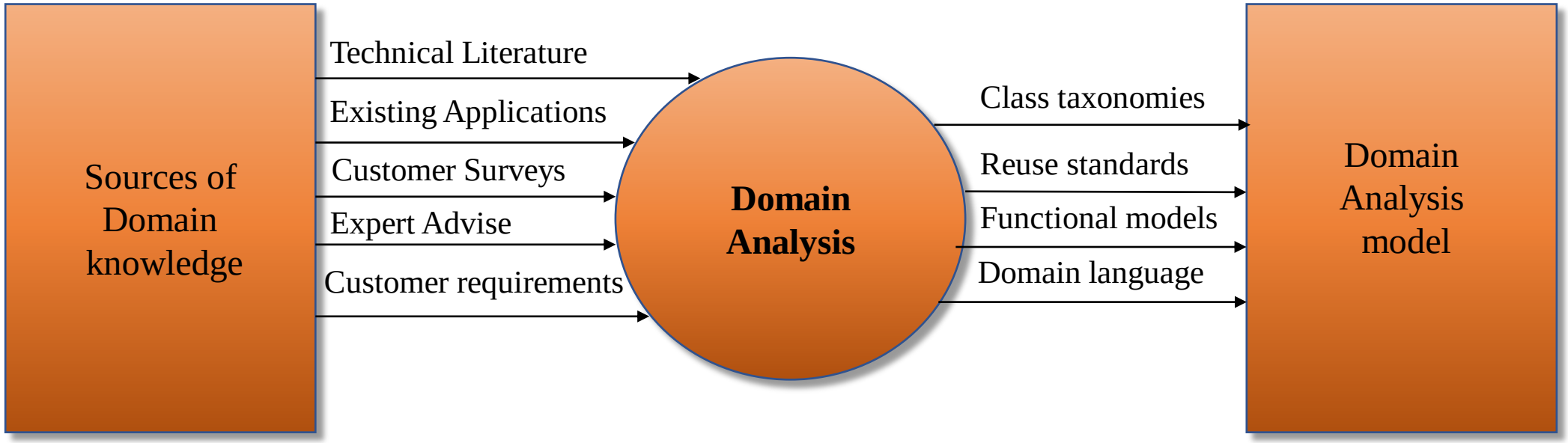

Figure: Inputs and outputs for domain analysis

Summary

- Requirement model comes into set of models that describe the data , functional and behavioural aspects of the system.
- Objectives of requirement model is to describe what the customer needs and define set of requirements.
- Analysis rules of thumb has given the set of rules to be followed in requirement modelling.
- Domain analysis defines analysis patterns that can be reused in similar applications.

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Thank You

Smt. G. Sumalatha MTech, (PhD),
email ID:sumalathagopathoti@gmail.com