

SOFTWARE ENGINEERING-I

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Elements of Analysis Modeling

- The Data Dictionary.
- Data Modeling
- Data objects, Attributes, Relationships
- ERD with example

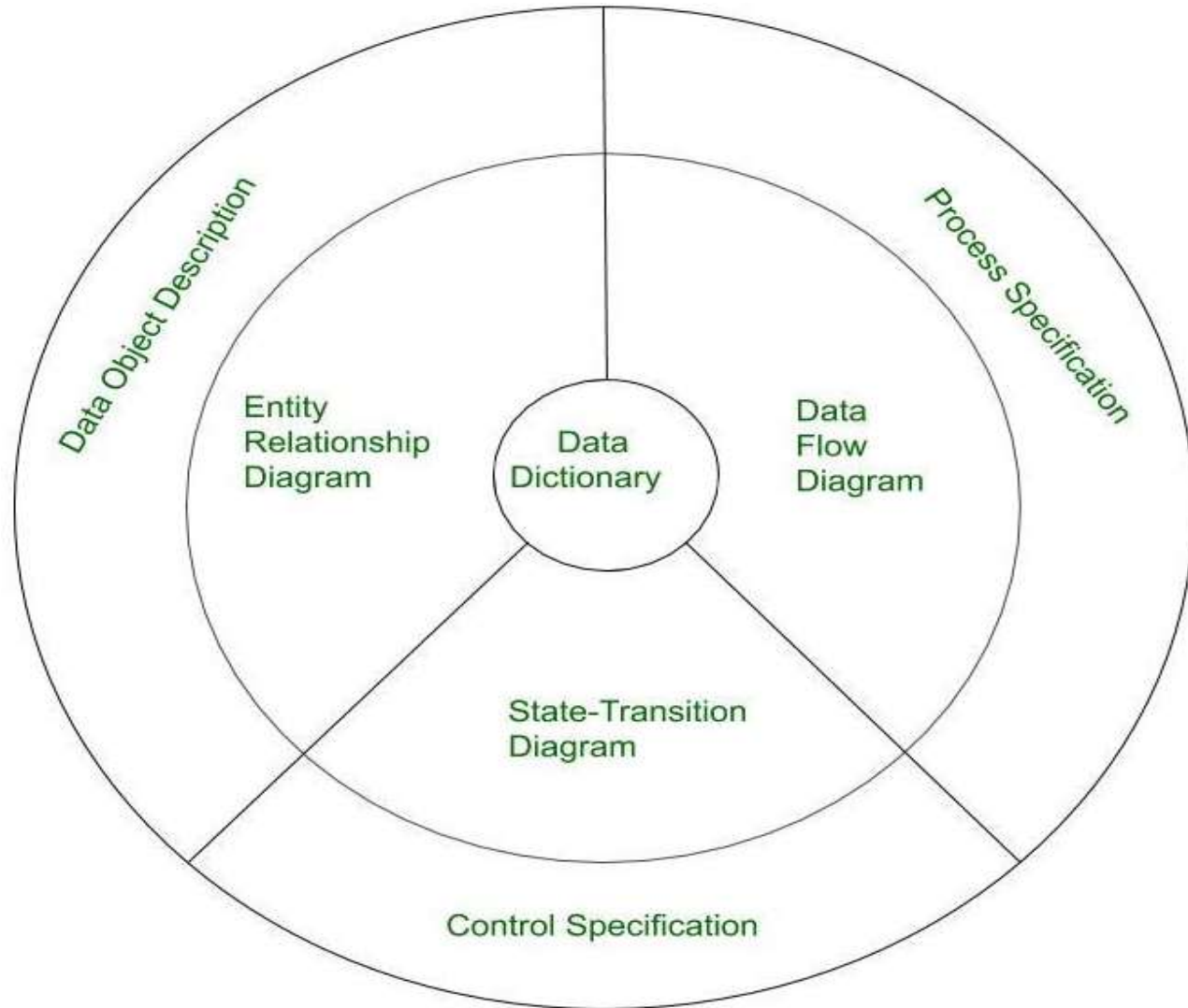
Elements of Analysis Modeling

- **Analysis Model** is a technical representation of the system. It acts as a link between system description and design model.
- In Analysis Modelling, information, behavior, and functions of the system are defined and translated into the architecture, component, and interface level design in the design modeling.

Objectives of Analysis Modelling:

- It must establish a way of creating software design.
- It must describe the requirements of the customer.
- It must define a set of requirements that can be validated, once the software is built.

Elements of Analysis Model:



Data Dictionary:

- It is a repository that consists of a description of all data objects used or produced by the software.
- It stores the collection of data present in the software.
- It is a very crucial element of the analysis model.
- It acts as a centralized repository and also helps in modeling data objects defined during software requirements.

Entity Relationship Diagram (ERD):

- It depicts the relationship between data objects and is used in conducting data modeling activities.
- The attributes of each object in the Entity-Relationship Diagram can be described using Data object description.
- It provides the basis for activity related to data design.

Data Flow Diagram (DFD):

- It depicts the functions that transform data flow and it also shows how data is transformed when moving from input to output.
- It provides the additional information which is used during the analysis of the information domain and serves as a basis for the modeling of function.
- It also enables the engineer to develop models of functional and information domains at the same time.

State Transition Diagram:

- It shows various modes of behavior (states) of the system and also shows the transitions from one state to another state in the system.
- It also provides the details of how the system behaves due to the consequences of external events.
- It represents the behavior of a system by presenting its states and the events that cause the system to change state.
- It also describes what actions are taken due to the occurrence of a particular event.

Process Specification:

- It stores the description of each function present in the data flow diagram.
- It describes the input to a function, the algorithm that is applied for the transformation of input, and the output that is produced.
- It also shows regulations and barriers imposed on the performance characteristics that are applicable to the process and layout constraints that could influence the way in which the process will be implemented.

Control Specification:

- It stores additional information about the control aspects of the software.
- It is used to indicate how the software behaves when an event occurs and which processes are invoked due to the occurrence of the event.
- It also provides the details of the processes which are executed to manage events.

Data Object Description:

- It stores and provides complete knowledge about a data object present and used in the software.
- It also gives us the details of attributes of the data object present in the Entity Relationship Diagram.
- Hence, it incorporates all the data objects and their attributes.