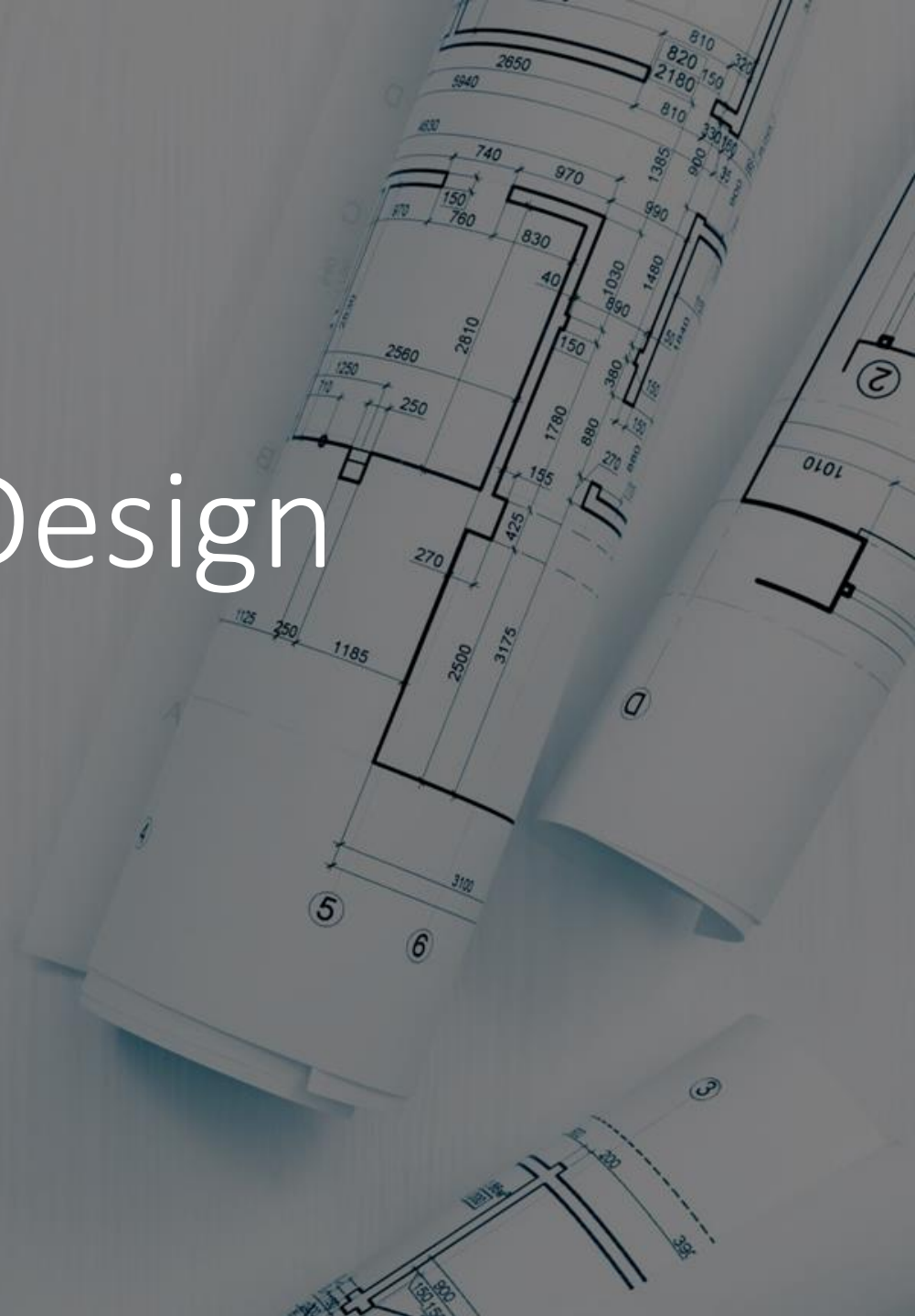
Architectural Design

UNIT - 3



Architectural Design

- Architectural Design: Architectural Design Decisions, System Organisation, Modular Decomposition Styles, Control Styles, Reference Architectures.
- User Interface Design: Need of UI design, Design issues, The UI design Process, User analysis, User Interface Prototyping, Interface Evaluation.
- Project Management

  Software Project Management, Management activities, Project Planning, Project Scheduling, Risk Management.
- Quality Management: Process and Product Quality, Quality assurance and Standards, Quality Planning, Quality Control, Software Measurement and Metrics.

Architectural Design

- It is the initial design process of identifying the sub systems and establishing a framework for sub system control and communication. The output of this design process is a description of software architecture

- The architectural design process is concerned with establishing a basic structural framework that identifies the major components of the system and the communication between them

Architectural Design

The advantages of explicitly designing and documenting a software architecture

- **Stakeholder communication** – The architecture is a high level presentation of the system that may be used as a focus for discussion by range of different stakeholders
- **System analysis** – Making a system architecture explicit at an early stage in the system development requires some analysis. Architectural design decisions have a profound effect on whether a system can meet critical requirements such as performance, reliability and maintainability
- **Large scale reuse** – A system architecture model is a compact manageable description of how a system is organised and how the components interoperate. It is often the same for systems with similar requirements and can support large scale software reuse

Architectural Design

- It is a creative process where a system is established that will satisfy the functional and nonfunctional requirements
- Activities within the system differ radically depending upon the type of system being developed, the experience of the architect and the requirements

Architectural Design

- During this process architects based on their experiences and knowledge answers the following questions

  - Is there a generic application that can act as a template for the system
  - How will the system be distributed across number of processors
  - What styles are appropriate for the system
  - What will be the fundamental approach used to structure the system
  - How will big units be decomposed into smaller modules
  - What strategy will be used to control the operation of modules
  - How will architectural design be evaluated
  - How the architecture will be documented

Architectural Design Models

- The product of architectural design process is a design document containing graphical representation of the system and describes how system is structured into modules
- Architecture models that may be developed are
  - Static structural model – Shows components to be developed as separate unit
  - Dynamic process model – Shows how the system is organised into processes at runtime
  - Interface model – Defines services offered by each subsystem
  - Relationship models – Shows relationships between subsystems
  - Distribution models – Shows how a distributed across computers

System Organisation

- Reflects the basic strategy that is used to structure a system
- May be directly reflected in sub system structure but the sub system includes more details
- There may be no direct mapping from sub system to organisational structure
- Following organisational styles are used widely
  - Repository Model
  - Client Server Model
  - Layered Model

Repository Model

- Sub systems making up a system must exchange information which can be done in two ways
  - All shared data is held in central database that can be accessed by all sub systems called as repository model
  - This model is suited to applications where data is generated by one sub system and used by another
  - Examples are command and control systems, MIS, CAD and CASE toolset

Repository Model