



SNS COLLEGE OF TECHNOLOGY



Coimbatore-35.

An Autonomous Institution

COURSE NAME : 19CST201 AGILE SOFTWARE ENGINEERING

II YEAR/ III SEMESTER

UNIT – I INTRODUCTION TO SOFTWARE ENGINEERING



UNIT I INTRODUCTION TO SOFTWARE ENGINEERING

The Nature of Software -Software Engineering - Software engineering Practice – Process Models: Generic – Prescriptive – Specialized - United Process - Personal and Team Process Models - Process Technology-Understanding Requirements-Design concepts & model-Software quality concepts & Review metrics.



Software Process Model

- It's a development strategy designed to solve an actual problem in an industry settings
 - Generic process framework
 - **Specialized process models**
 - The unified process
 - Personal and team process models



SPECIALIZED PROCESS MODELS

- This model take on many of the characteristics of one or more of the traditional models
- These models tend to be applied when a specialized or narrowly defined software engineering approach is chosen.
 - **Component Based Development** (Promotes reusable components)
 - **The Formal Methods Model** (Mathematical formal methods are backbone here)
 - **Aspect Oriented Software Development (AOSD)**(use crosscutting technology)



Component Based Development

- Component Based Software Engineering (CBSE) is a process that focuses on the design and development of computer-based systems with the **use of reusable software components**
- Develop software using already available components
- In this kind of development there is no concept of building any software from scratch



Definition and characteristics of components

- Software component is a software package ,a web service, a web resource that encapsulates a set of related functions/data
- Developed components must be portable
- Replaceable/ Reusable



CBSE Framework Activities

1. Component Qualification:

- Ensures that the system architecture define the requirements of the components for becoming a reusable component.
- It means “the services that are given, and the means by which customers or consumers access these services ” are defined as a part of the component interface.

2. Component Adaptation:

- This activity ensures that the architecture defines the design conditions for all component and identifying their modes of connection.



CBSE Framework Activities

3. Component Composition:

- This activity ensures that the Architectural style of the system integrates the software components and form a working system.

4. Component Update:

- This activity ensures the updation of reusable components.



Characteristics of CBSE



- Reusability
- Replaceable
- Not context specific
- Extensible



The Formal Methods Model (Proof, Calculation , precision, Understanding)

- What is a FORMAL METHOD MODEL?
 - The Formal Methods Model is an approach to Software Engineering that applies **mathematical methods or techniques** to the process of developing complex software systems. The approach uses a formal specification language to define each characteristic of the system. .



Formal methods can be useful in :

1. Articulating, and representing requirements .
2. Specifying software : developing a precise statement of what the software is to do .
3. Software design : Data refinement involves state machine specification, abstraction functions, and simulation proofs .
4. Coding verification
5. Enhancing early error detection .
6. Developing safe, reliable, secure software - intensive systems .
7. The overall effect of the use of formal techniques on time, cost ,and quality.



Formal Specification Methods

- Formal Specifications
- Formal Proofs
- Model Checking
- Abstraction



Aspect Oriented Software Development

UI Layer

- Security
- Profile
- Logging
- Transaction Management

Business Logic Layer

Data Access Layer



Aspect Oriented Software Development

Advantages :

- Cross cutting Concern
- Reuse
- Quick Development
- Enabled /Disabled



Thank You!