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 DEFINITION

❑ Software is: (1) instructions (computer programs) that when executed provide desired features, function, and performance; (2) data structures that enable the programs to adequately manipulate information, and (3) descriptive information in both hard copy and virtual forms that describes the operation and use of the programs

1)INSTRUCTIONS/Programs:

- Functionality
- Performance

The INSTRUCTIONS must be developed according to the users satisfaction

2) DATA STRUCTURE:

- Essential Components
- Maintains Data
- Algorithms/ Program logic
- Design

3)DOCUMENTS:

- User Manual
- Design Methods

Software Types

- **System software**—a collection of programs written to service other programs.

- **Application software**—stand-alone programs that solve a specific business need.

- **Engineering/scientific software**—has been characterized by "number crunching" algorithms (numerical algorithms)

Software Types

❑ **Embedded software**—resides within a product or system and is used to implement and control features and functions for the end user and for the system itself.

❑ **Product-line software**—designed to provide a specific capability for use by many different customers.

Software Types

- **Web applications** —called "WebApps," this network-centric software category spans a wide array of applications.

- **Artificial intelligence software** —makes use of non numerical algorithms to solve complex problems.

Software Engineering

Definition

*Software Engineering is the establishment and use of the **engineering principles** in order to obtain **economical software** that is reliable and work efficiently on real machines*

Software Engineering Activities

- Requirements gathering and Analysis
- Planning
- Design
- Development
- Testing
- Maintaining

Requirements gathering and Analysis

- Simple listing
- Surveys
- Interviews
- Focus
- Observation
- Use case Analysis

Types:

1)**Functional Requirements** –Something that the system must do;
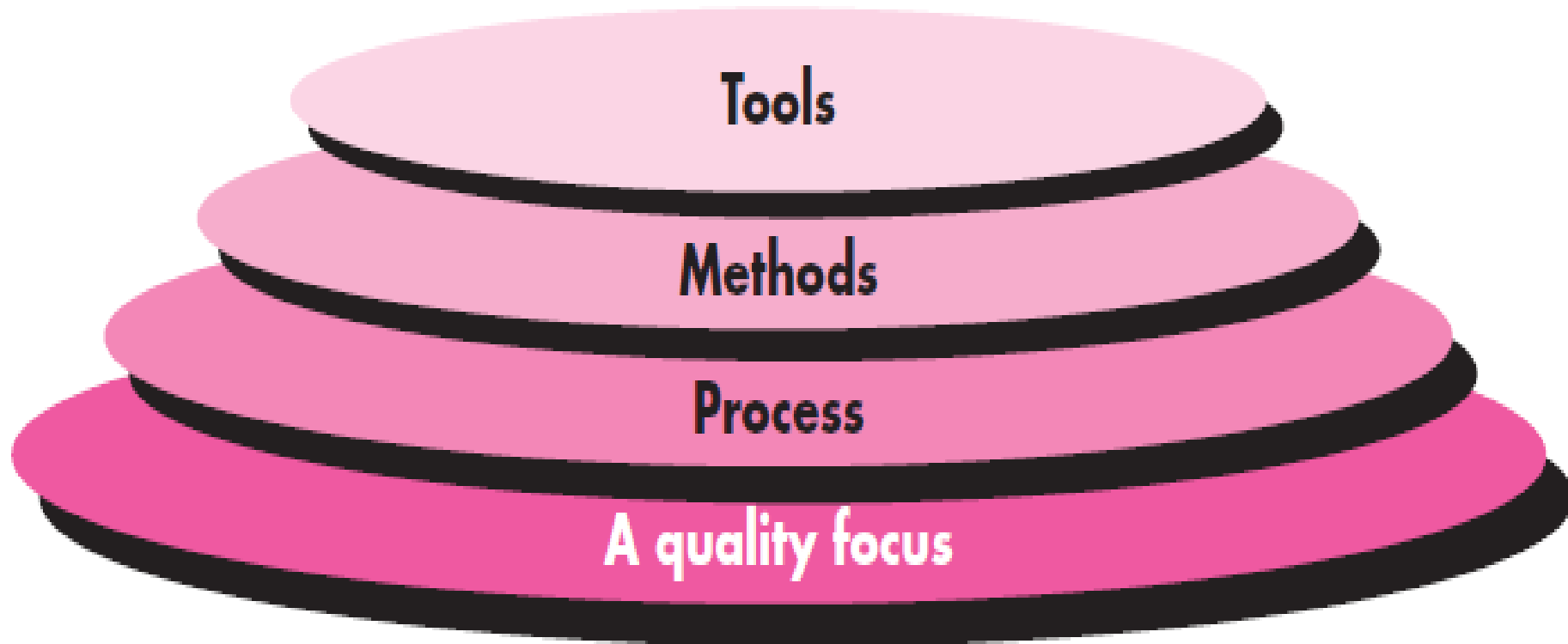
Eg:Business rules of functions like add a customer ,print invoice etc

2)**Non Functional Requirements** –quality characteristics or attributes of the system

Eg: providing user access more than customers expectation

Software Engineering Layers

Software Engineering Practice

The Essence of Software Engineering Practice :

➢ Understand the problem (communication and analysis).

➢ Plan a solution (modeling and software design).

➢ Carry out the plan (code generation).

➢ Examine the result for accuracy (testing and quality assurance).

Software Process

- A software process is represented as **a set of work phase** that is applied to design and build a software product

- There is **no ideal software process** and many organization have developed their own approach to software development

- A process is a collection of activities, actions, and tasks that are performed when some work product is to be created.

- The intent is always to deliver software in a timely manner and with sufficient quality to satisfy the customers

Fundamental Activities of Software Process

There are some fundamental activities that are common to all software
process :
- Software Specification
- Software design and implementation
- Software validation
- Software evolution

Software Process Framework

- A process framework establishes the foundation for a complete software engineering process by identifying a small number of framework activities that are applicable to all software projects, regardless of their size or complexity.