Software Engineering (SWE-250)

Engr. Javed Ali Abbasi
Lecturer, Department of Computer Science, SIBAU

Queries

What do you mean by developing software in stages in incremental model?

Difference integration and configuration?

Benefits of integration and configuration model?

Limitations of integration and configuration model?

Prototyping Process Model / Prototyping

Prototype is an early version of a software system that is used to demonstrate **concepts**, try out **design options**, and find out more about the **problem** and its **solutions** (Sommervile).

Prototyping is creation of **sample or model** for concept design of software.

Concept design of a product can be used as a **foundation/as a reference** for product development.

Prototyping Model Applications

It **shows** the **known functions** of the product and their **design** before the development.

It serves as a mechanism for **identifying unknown** software functions.

It helps in **validation** of both **known and unknown** (once identified) functions.

Prototype helps **cope** the **change** issue in SDLC by early **demonstrations** of key features to customers, who then can **experiment** and **refine** the requirements before **committing** to high software production **costs** (Sommervile).

Prototype Types (basis foundation/reference)

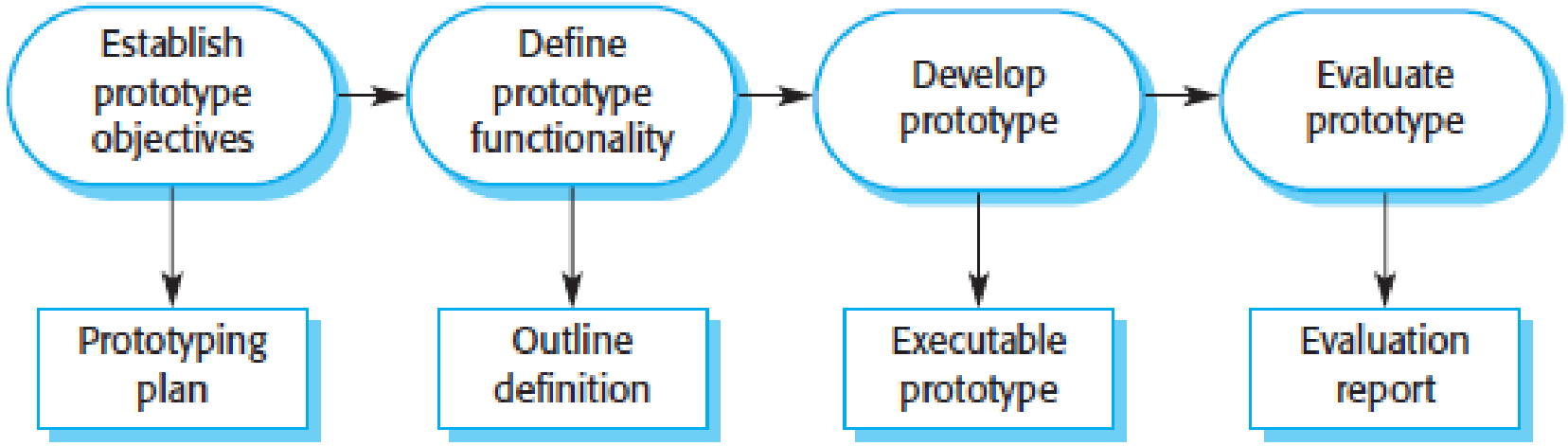
Throwaway/Rapid prototyping

- Prototype can be for a targeted **complete** system or the **part** of the system
- Prototype will be used as a **reference** for creating the target system
- Prototype will be created by selecting **any** aspect most probably the **unknown** and **critical**

Evolutionary prototyping

- Prototype can be for a targeted **complete** system or the **part** of the system
- Prototype will be used as a **foundation** for creating the target system
- Prototype will be created using **known** aspects first and then the software functionality **evolves**

Prototyping



Prototype Types (Specifically Graphical User Interfaces)

Low fidelity prototype: simple sketches of graphical user interfaces, may be paper based or digital, major consideration is of user experience design.

Medium fidelity prototype: graphical user interfaces with dummy data, interaction component and flow of screens, may be paper based or digital.

High fidelity prototype: sophisticated simulations of graphical user interfaces with real data, flow of screens and interaction capability.

V-Model

Verification and Validation Process Model

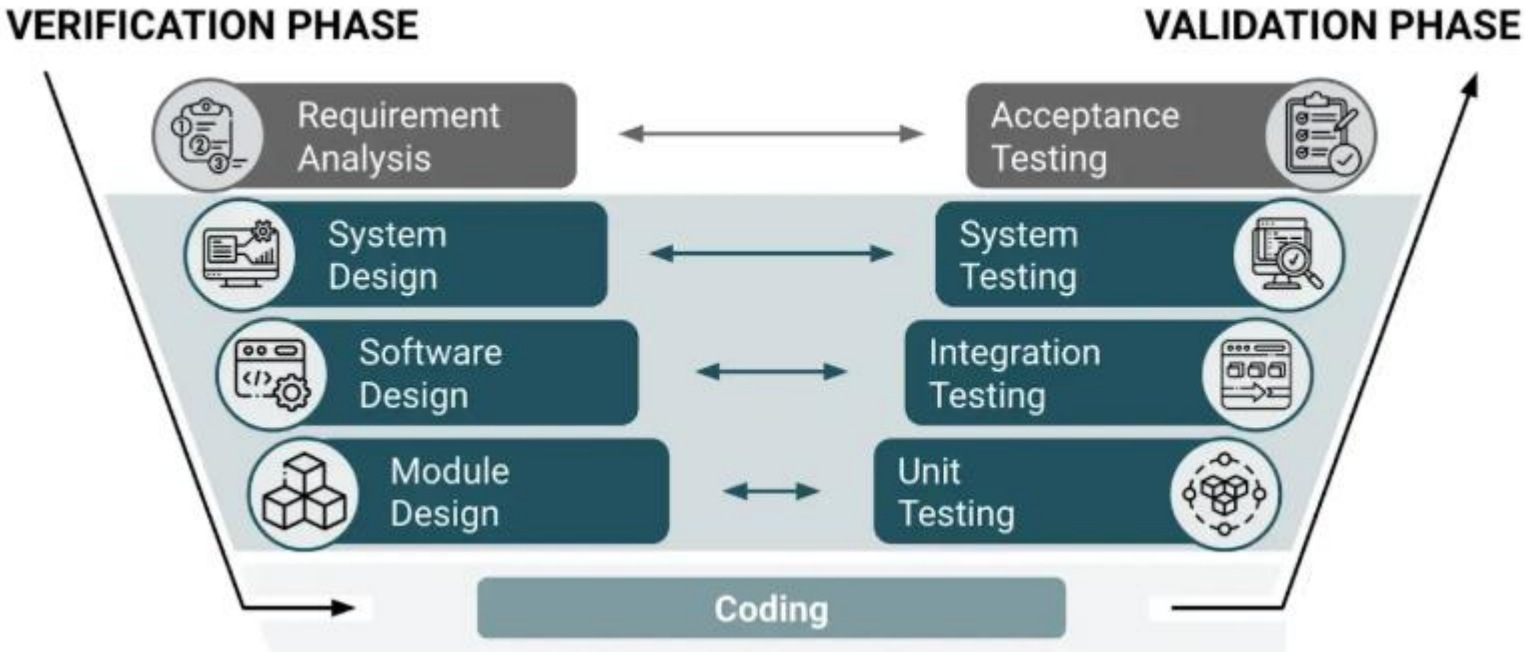
Extension of Waterfall model, based on plan driven philosophy, follows the linear sequential flow, & applicable for all projects as of waterfall

Prioritizes early and rigorous assessment of product work being performed rightly (explicit) (static analysis)

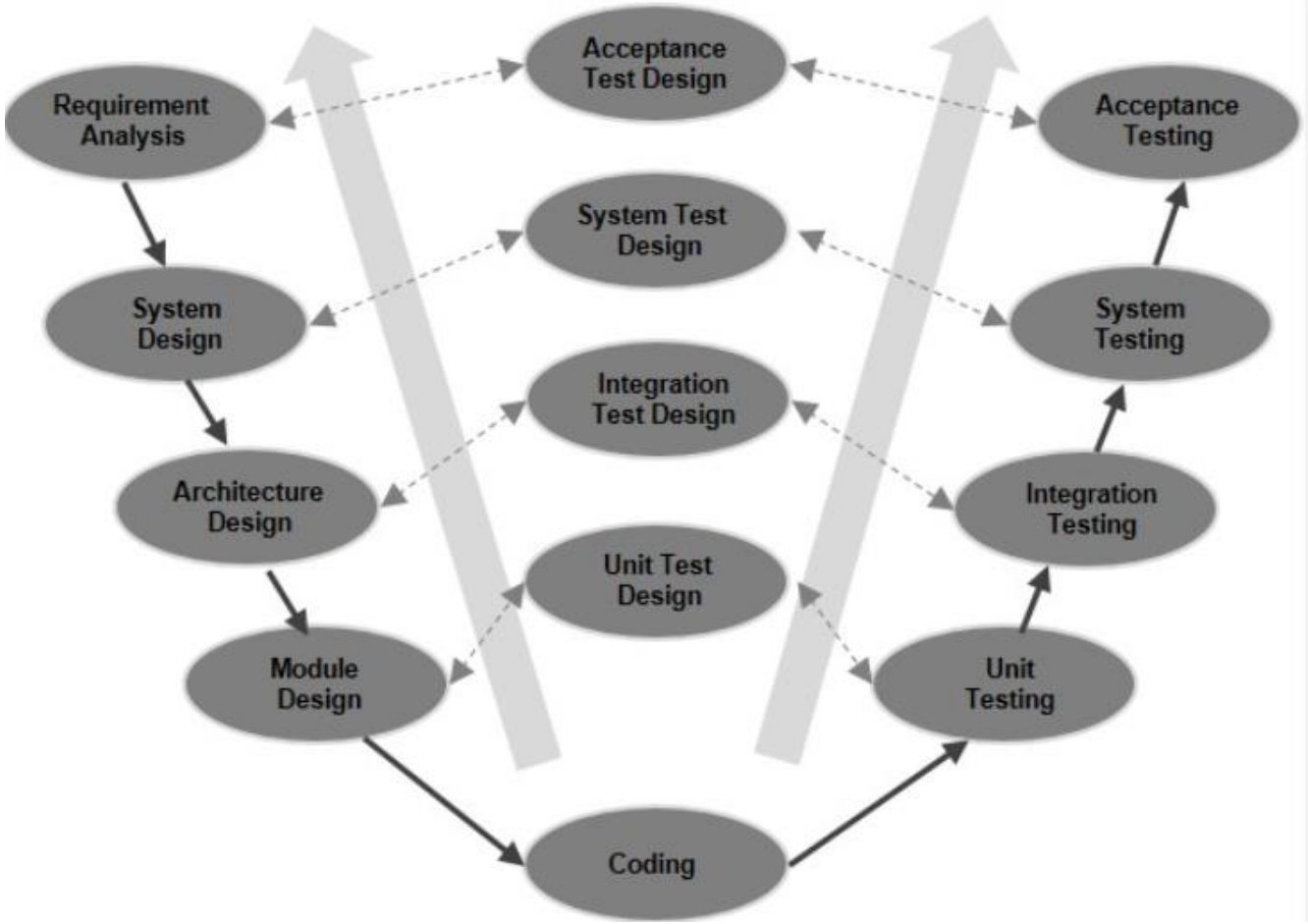
Prioritizes the confirmation of right product being developed (features as demanded & attributes as needed) (explicit) (dynamic analysis)

The framework provides mechanism for test data creation at each stage of SDLC before development for relevant testing type

V-Model


VERIFICATION PHASE
VALIDATION PHASE
Requirement Analysis
Acceptance Testing
System Design
System Testing
Software Design
Integration Testing
Module Design
Unit Testing
Coding

V-Model


Requirement Analysis
Acceptance Test Design
Acceptance Testing
System Test Design
System Design
System Testing
Integration Test Design
Architecture Design
Integration Testing
Unit Test Design
Module Design
Unit Testing
Coding

V-Model (SommerVille)