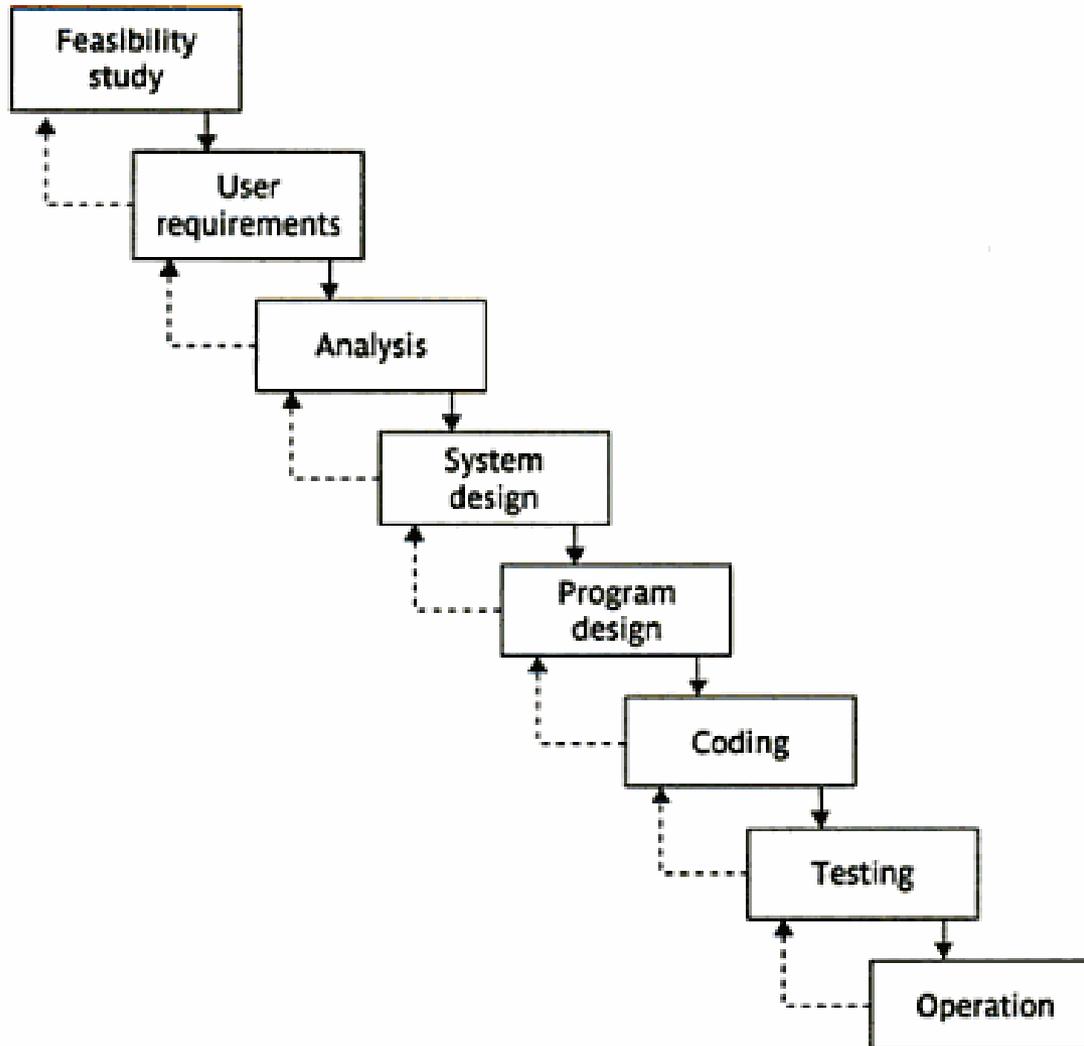


Waterfall, V-process and Spiral Model

Waterfall Model

- Also known as the one-shot or once-through model.
- The upwards and backwards arrows indicate that a later stage may reveal the need for some extra work at an earlier stage, but this should definitely be the exception rather than the rule.

Waterfall Model Cont'd



When to use the Waterfall Model

- Requirements are very well known
- Product definition is stable
- Technology is understood
- New version of an existing product
- Porting an existing product to a new platform.

Waterfall Strengths

- Easy to understand, easy to use
- Provides structure to inexperienced staff
- Sets requirements stability
- Good for management control (plan, staff, track)
- Works well when quality is more important than cost or schedule

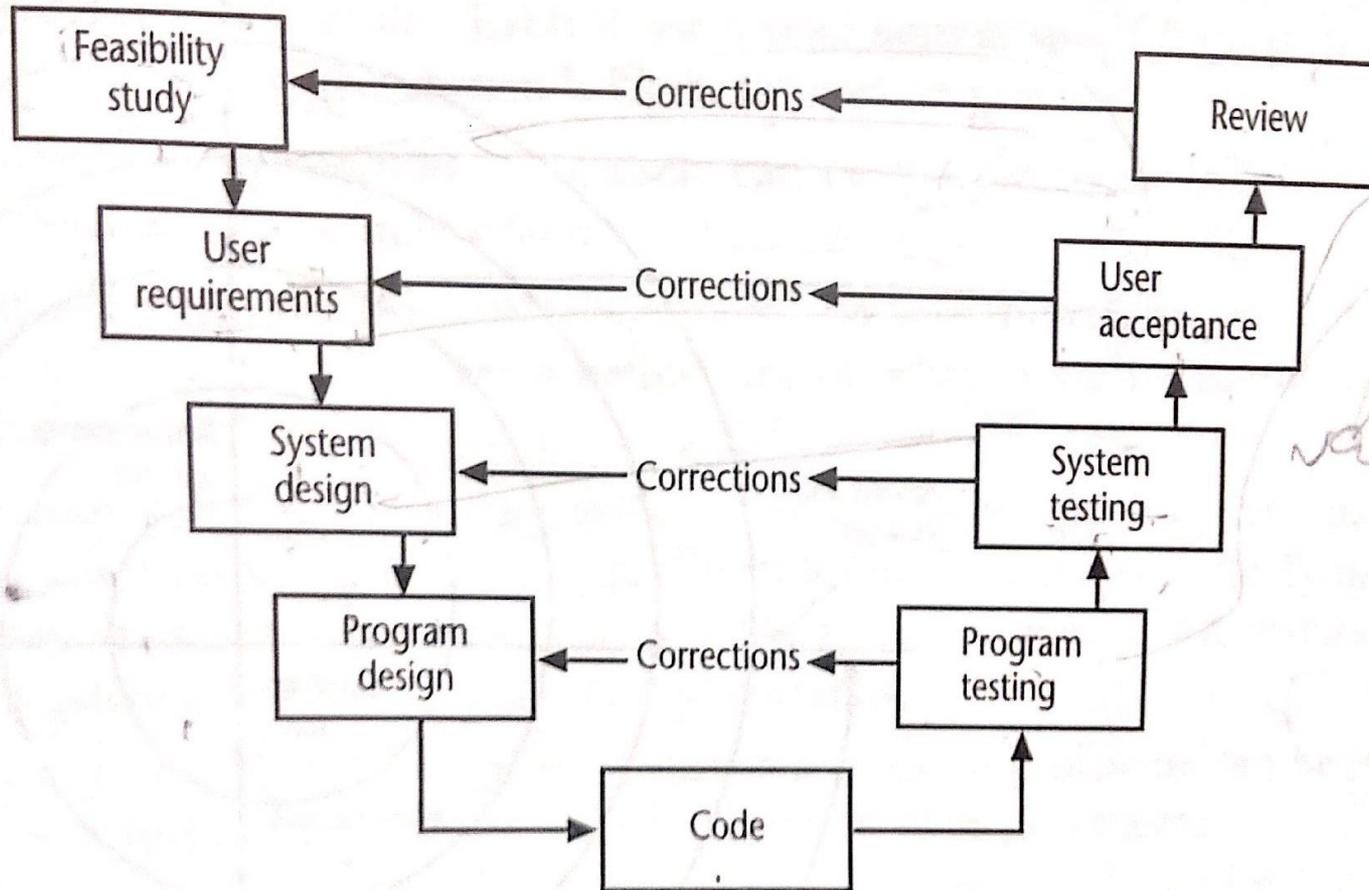
Waterfall Disadvantages

- Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage.
- High amounts of risk and uncertainty.
- Not a good model for complex and object-oriented projects.
- Poor model for long and ongoing projects.
- Not suitable for the projects where requirements are at a moderate to high risk of changing.

V-Process Model

- Expand the activity testing in waterfall model.
- Each step has a matching validation process which can, where defects are found, causes loop back to the corresponding development stage and a reworking of the following steps.

V-Process Model Cont'd



V-Process Strengths

- Simple and easy to use.
- Testing activities like planning, test designing happens well before coding. This saves a lot of time. Hence higher chance of success over the waterfall model.
- Proactive defect tracking – that is defects are found at early stage.
- Avoids the downward flow of the defects.

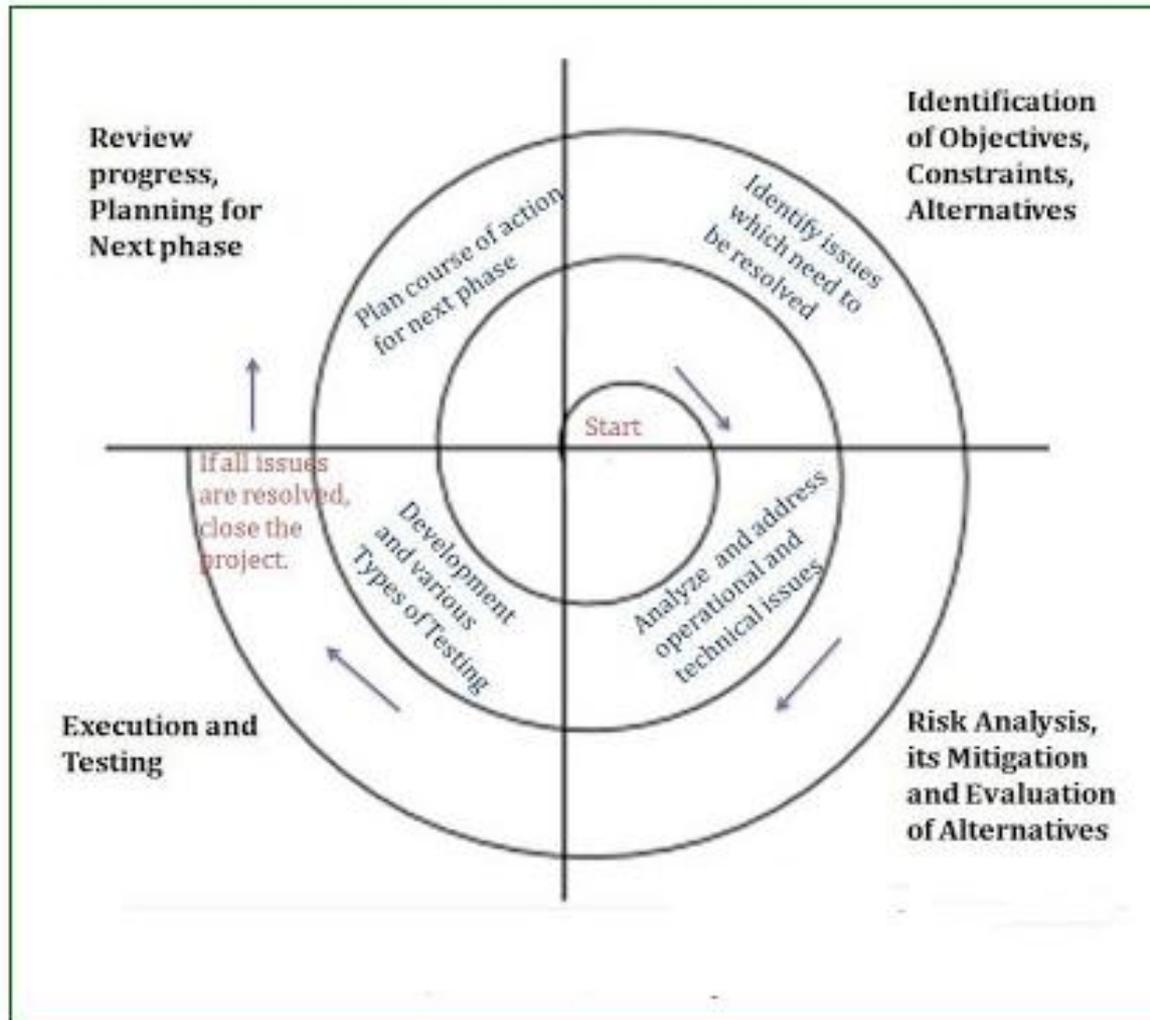
V-Process Weaknesses

- Does not easily handle concurrent events
- Does not handle iterations or phases
- Does not easily handle dynamic changes in requirements
- Does not contain risk analysis activities

Spiral Model

- The Spiral Life Cycle Model is a type of iterative software development model which is generally implemented in high risk projects.
- In this system development method, we combine the features of both, waterfall model and prototype model.
- In Spiral model we can arrange all the activities in the form of a spiral.

Spiral Model Cont'd



Spiral Model Cont'd

1. To determine the objectives, alternatives and constraints. We try to understand the product objectives, alternatives in design and constraints imposed because of cost, technology, schedule, etc.
2. Risk analysis and evaluation of alternatives. In the risk analysis phase, a process is undertaken to identify risk and alternate solutions. A prototype is produced at the end of the risk analysis phase. If any risk is found during the risk analysis then alternate solutions are suggested and implemented.
3. Execution of that phase of development. In this phase we develop the planned product. Testing is also done. In order to do development, waterfall or incremental approach can be implemented.
4. Planning the next phase. Requirements are gathered during the planning phase.

Spiral Model Advantages

- High amount of risk analysis hence, avoidance of Risk is enhanced.
- Good for large and mission-critical projects.
- Strong approval and documentation control.
- Additional Functionality can be added at a later date.
- Software is produced early in the software life cycle

Spiral Model Disadvantages

- Can be a costly model to use.
- Risk analysis requires highly specific expertise.
- Project's success is highly dependent on the risk analysis phase.
- Doesn't work well for smaller projects.