

# Software Development Life Cycle (SDLC)

*Overview, Models, Challenges, and Correct  
Approach*

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# *What is SDLC?*

Definition : SDLC stands for Software Development Life Cycle. It is a structured process for developing Software Applications.

**key stages includes:**

- **Planning**
- **Analysis**
- **Design**
- **Development**
- **Testing**
- **Deployment**
- **Maintenance**

# *Types of SDLC Models*

- ***Waterfall Model***: Sequential Approach, Each phase must be completed before the next begins .
- ***Iterative Model***: Incremental approach where the development is divided into smaller cycles (iterations). Each iteration produces a working version of the software with added features and improvements.
- ***Spiral Model***: Combines iterative development with risk management . Focuses on early identification and mitigation of risks .
- ***V-Model (Validation and Verification)***: Extension of the waterfall with a focus on testing at each stage .

# *Challenges & Drawbacks in SDLC Waterfall:*

- Model Inflexible to changes once the process starts.
- Poor adaptability to evolving customer requirements.
- Agile Model Can become chaotic without proper management.
- Difficult to predict timelines and costs due to its flexible nature.
- Spiral Model High complexity and management overhead.
- Suitable only for large, high-risk projects.
- Difficult to address changes after testing begins.
- Needs a high degree of automation and collaboration

# *Is this a Correct Approach?*

## **why yes?**

- For well-defined, low-risk projects, a structured approach like Waterfall works well.
- For fast-paced, evolving environments, Agile is preferable as this provide flexibility.

## **Why No?**

- No single model fits all projects .
- The right approach depends on :
  - Project size
  - Complexity
  - Stakeholder involvement
  - Risk management requirements Slide