

# **Software Engineering**

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# Software Development Life Cycle

Our goal is to deliver software that meets expectations on time while keeping in budget.

Ideally, the software engineering development cycle would look like this:

- Requirements
- Design
- Implementation
- Verification
- Maintenance

More traditional methodologies.

## Definition 1.0.1 ► Software Development Life Cycle

SDLC describes the

## 1.1 Waterfall

### Definition 1.1.1 ► Waterfall

The **waterfall** SDLC follows a sequence of steps, which results in finished software at the end.

- Centralized and standardized approach to software development
- Not nimble or responsive
- Conception, development, delivery, support, and obsolescence
- Move on to next phase when management approves
- Each phase well documented and independent of other stages' documentation

Although there is no prescribed way to use the waterfall methodology, it follows these general phases:

1. Investigation: brain storm, explore ideas and customer problems

2. Requirements: gather customer requirements; refine initial ideas with functional needs and wants
3. Design: detailed model and architecture of software; should make project plan, marketing documents, and design documents
4. Implementation: Development and testing; deliver master source code tree and appropriate documentation
5. Verification: test and evaluate software and security; much will be done in implementation as well
6. Maintenance:
7. Obsolescence: product reaches end of useful lifetime; how to obsolete product

## 1.2 Agile

- Set of guiding principles; not a methodology or framework
- Iterative approach to software development
- Each iteration gets closer to a finished product
- Agile methodologies include Scrum, Kanban, Extreme Programming (XP), Lean, Crystal

Agile prioritizes four key values:

1. Individuals and interactions
2. Working software
3. Customer collaboration
4. Responding to change

Scrum

- Most popular agile framework
- Helps small teams build big products
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