

# Software Development and Testing Life Cycles

## Popular Methodologies



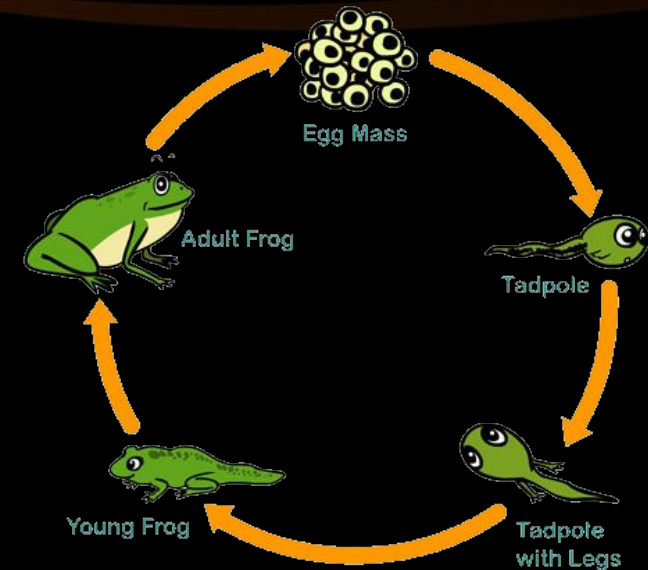
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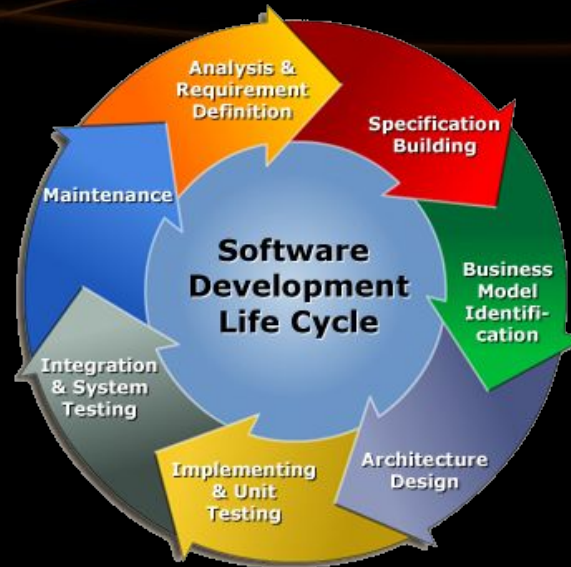
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# Introduction to Software Development Life Cycle



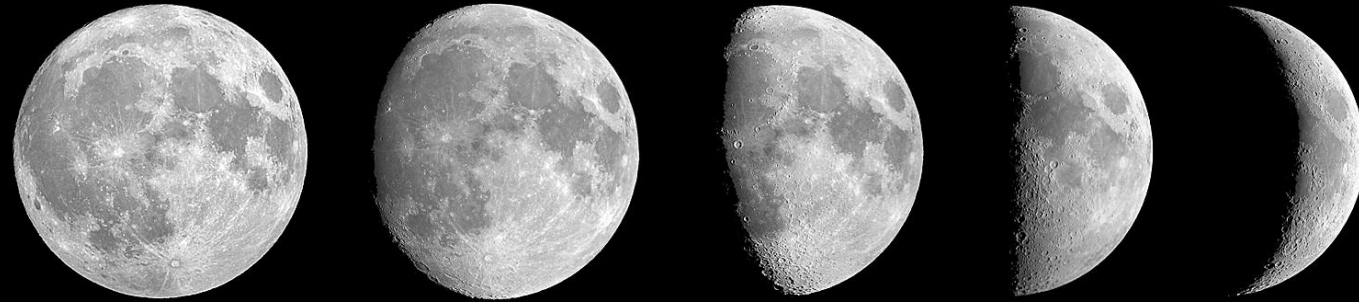
# Introduction SDLC

- The assembly line process of an information system
- Aims to produce product that meets or exceeds the customer expectations
- Consist of clearly defined and distinct work phases



# Phases of the SDLC

- Work phases are generally separated to
  - Idea
  - Planning
  - Creating
  - Testing
  - Deploying



# Phases of the SDLC

- Depending on the size of the project the phases may lack of overlap
- They are generally interdependent
- The phases of analysis, planning and design are in most cases longer than the initial creation
- The continuous delivery compensates it



# Development Methodologies

Waterfall, Scrum, Lean Development, Kanban, Extreme Programming



# What is a Development Methodology?

- A **development methodology** is a set of practices and procedures for organizing the software development process
  - A set of rules that developers have to follow
  - A set of conventions the organization decides to follow
  - A systematical, engineering approach for organizing and managing software projects
- **Heavyweight** and **agile** methodologies
  - Heavy methodologies rely on formal procedures and documents
  - Agile methodologies rely on small iterations and less formalities



# Development Methodologies

- Back in history
  - The "Waterfall" Process
    - Heavyweight
    - Nowadays used by big companies
  - Rational Unified Process (RUP)
  - Microsoft Solutions Framework (MSF)
- Modern development methodologies
  - Agile development processes
  - Scrum, Kanban, Lean Development, Extreme Programming (XP),

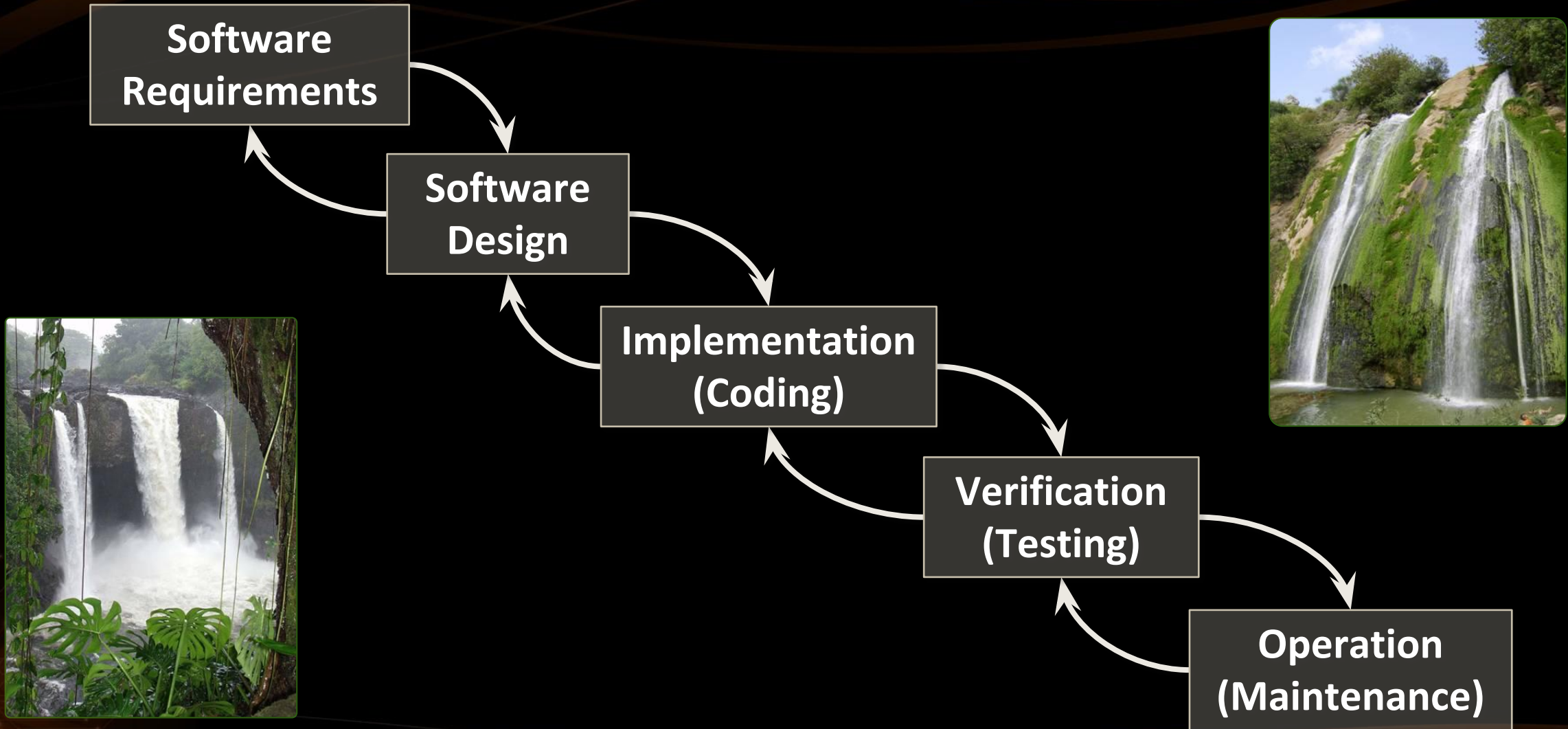


# The Waterfall Development Process





# The Waterfall Development Process





# Agile Development



# The Agile Manifesto

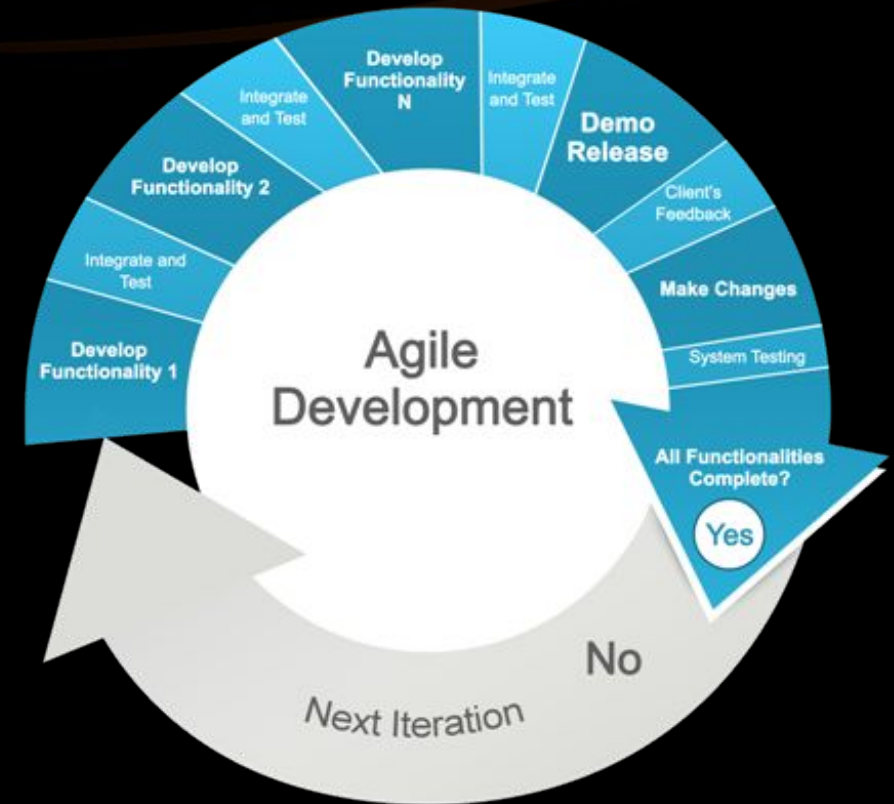
“Our highest priority is to satisfy the customer through early and continuous delivery of valuable software”

*Manifesto for Agile*

**The Agile Spirit**

# Agile Methodologies

- Scrum
- Kanban
- Lean Software Development
- eXtreme Programming (XP)
- Feature-Driven Development (FDD)
- Crystal Family of Methodologies
- Adaptive Software Development (ASD)
- Dynamic System Development Model (DSDM)
- Agile Unified Process (AUP)





# Scrum

- **Scrum** is an iterative and incremental agile software development methodology for managing product development
  - Very popular in the software industry
- Scrum roles:
  - **Scrum Master** – maintains the Scrum processes
  - **Product Owner** – represents the stakeholders
  - **Team** – a group of about 7 people
    - The team does the actual development: analysis, design, implementation, testing, etc.



# Scrum Terminology

- Sprint

- An iteration in Scrum
- Usually few weeks

- Product Backlog

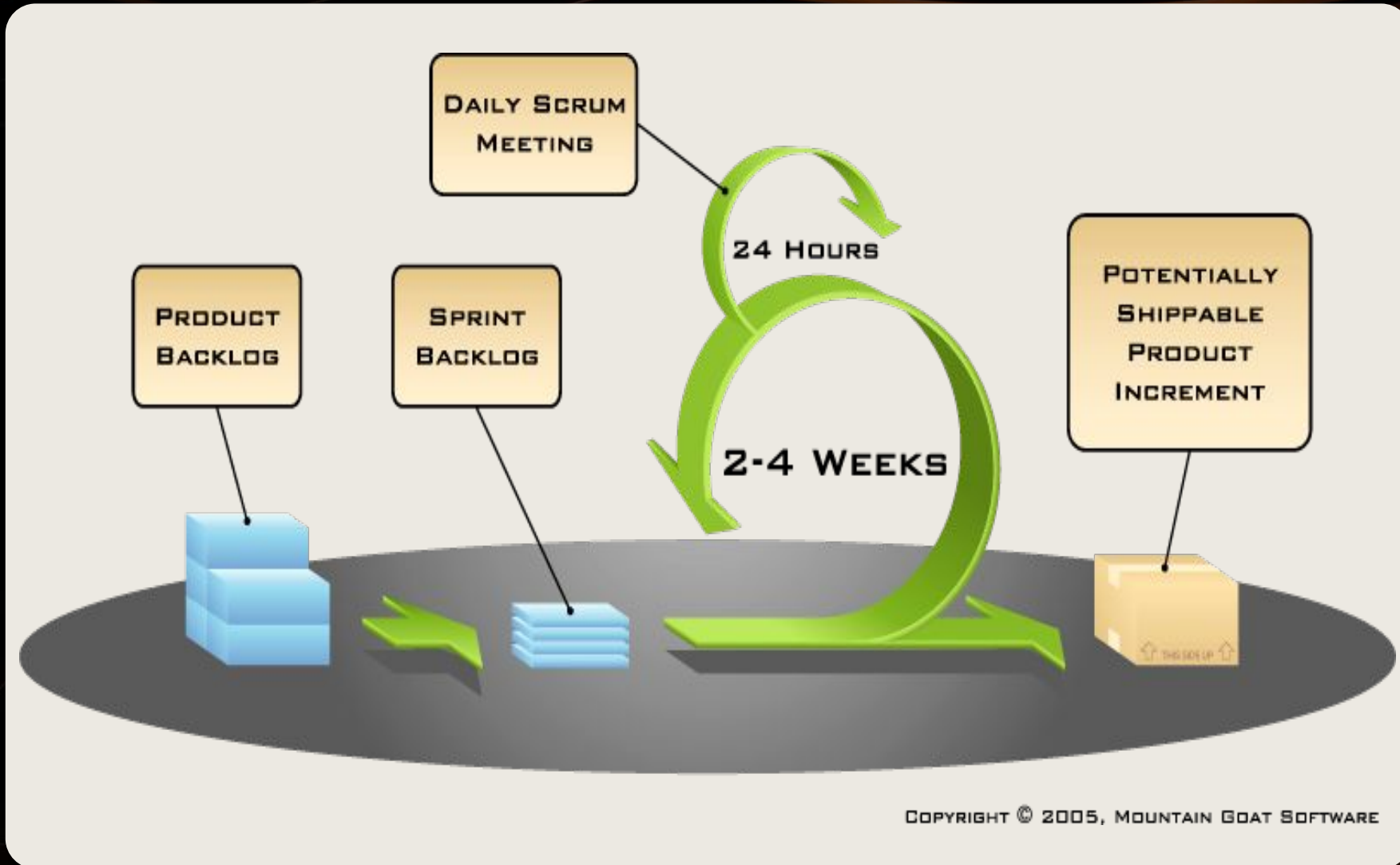
- All features that have to be developed

- Sprint Backlog

- All features planned for the current sprint



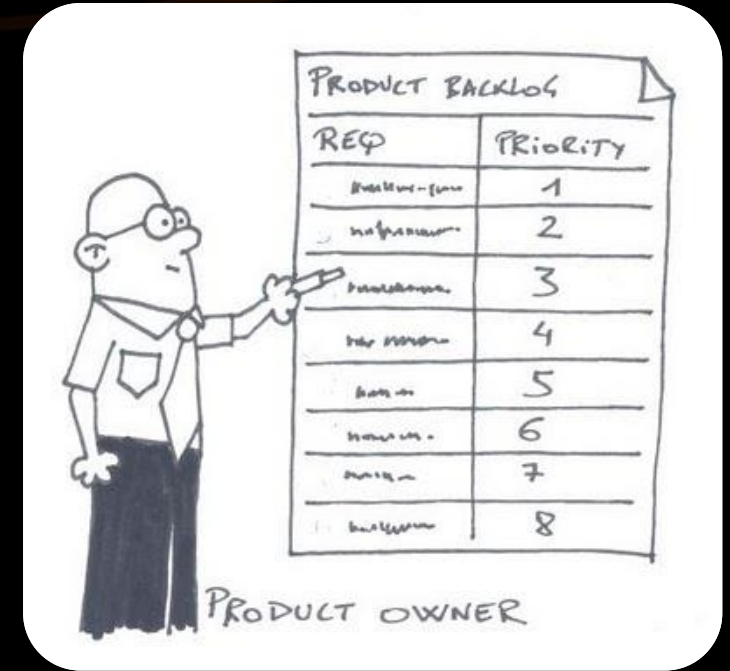
# The Scrum Process Framework





# Scrum Practices

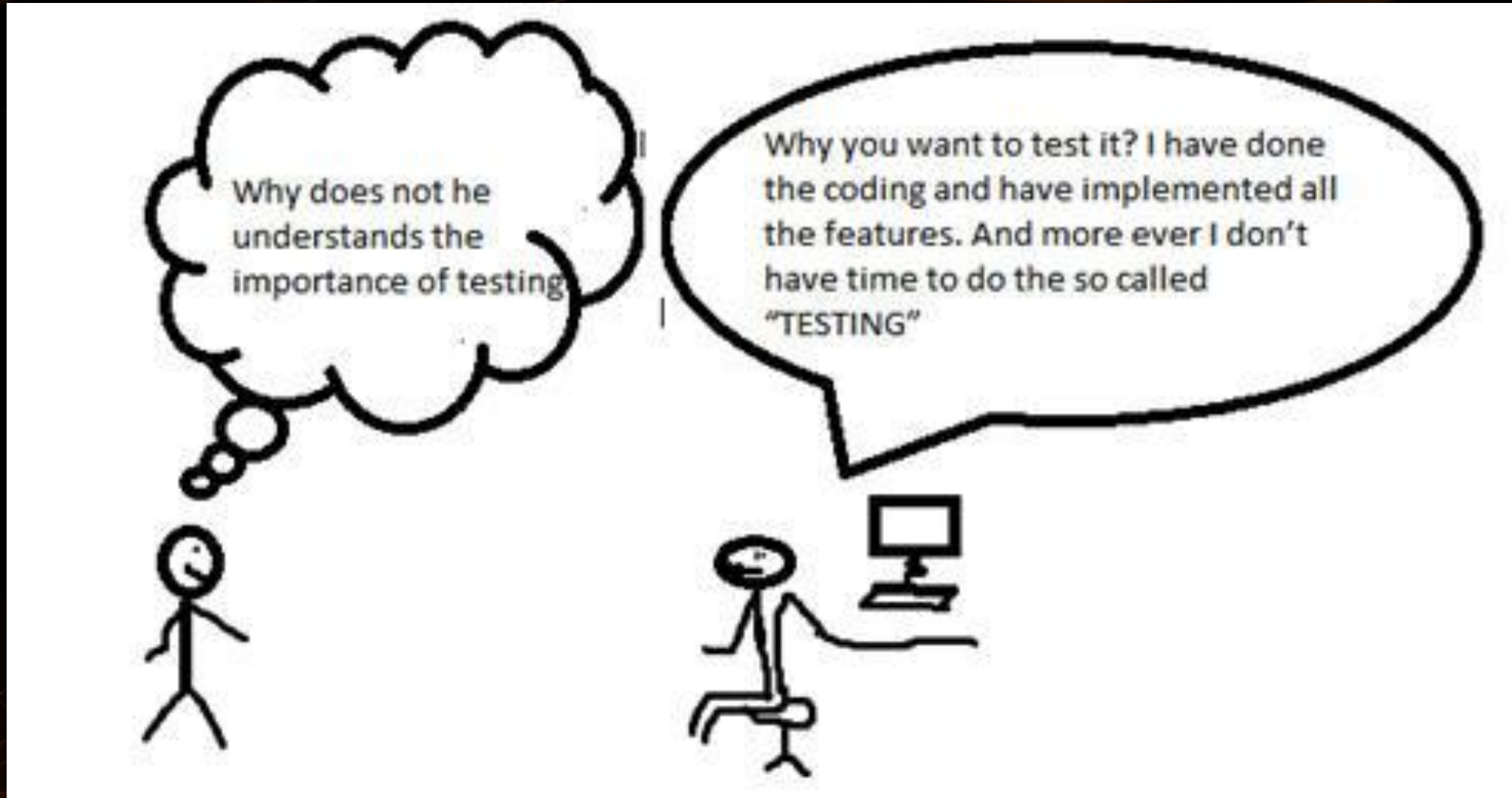
- **Sprint Planning Meeting**
  - At the beginning of the sprint cycle
  - Establish the Sprint backlog
- **Daily Scrum stand-up meeting**
  - Team members share progress details
  - Timeboxed to 15 minutes
- **Sprint Review Meeting**
  - Review the work completed / not completed





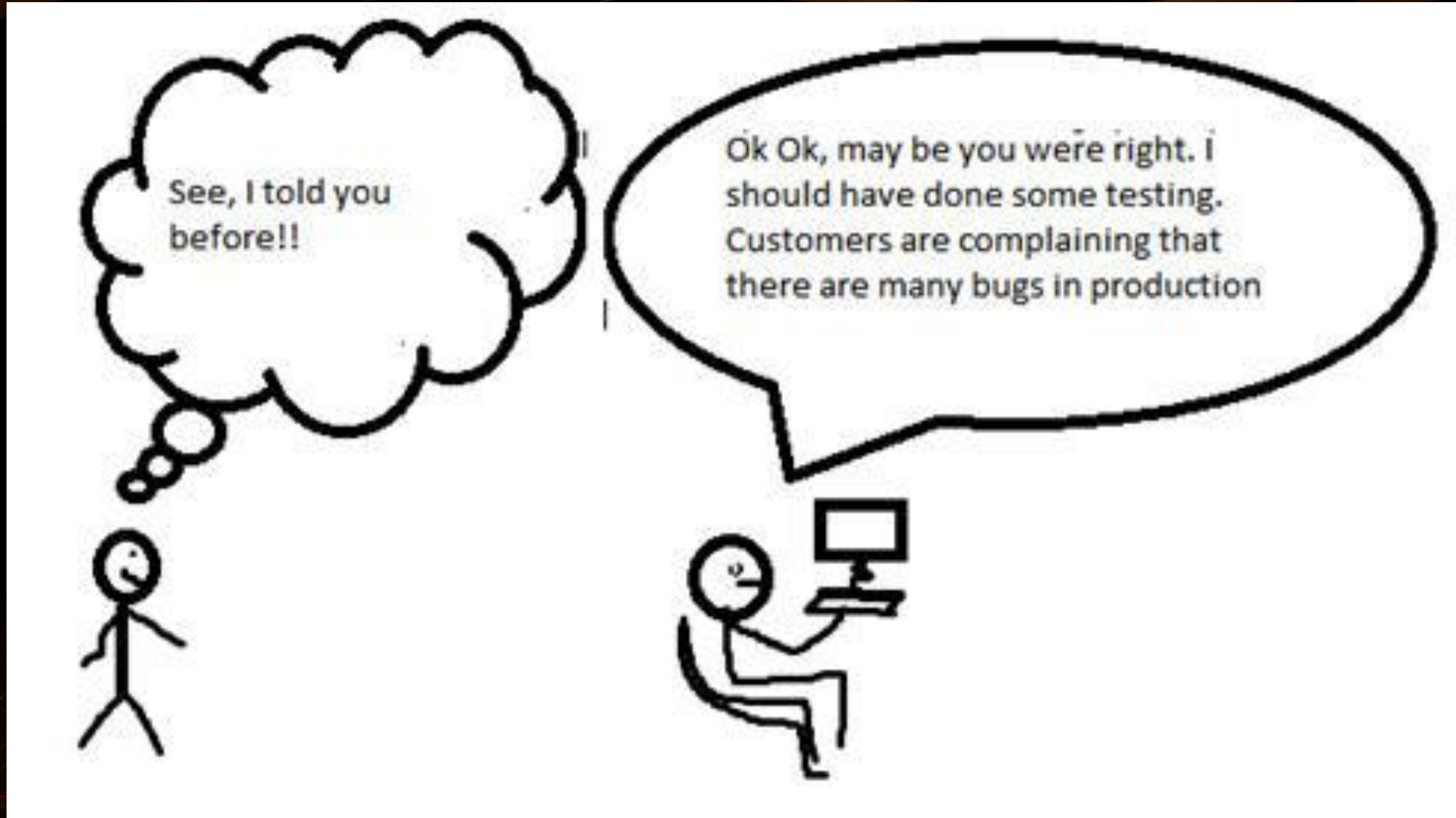
# Testing Life Cycle

# Introduction STLC



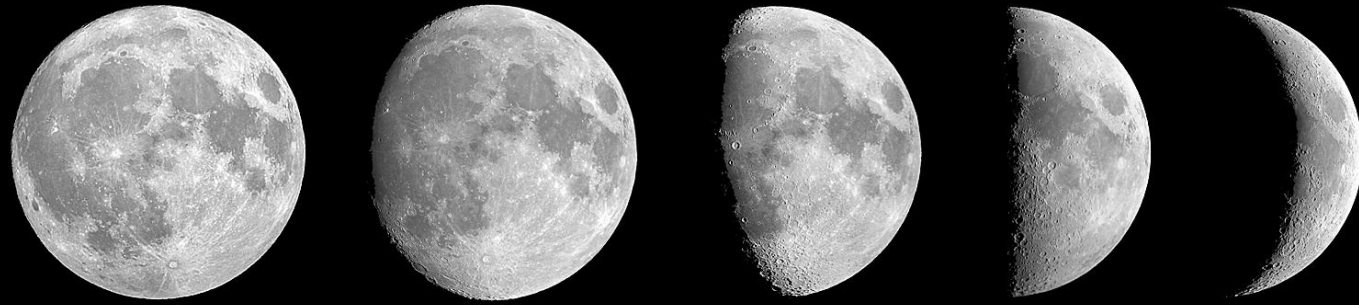


# Introduction STLC (2)



# Phases of the STLC

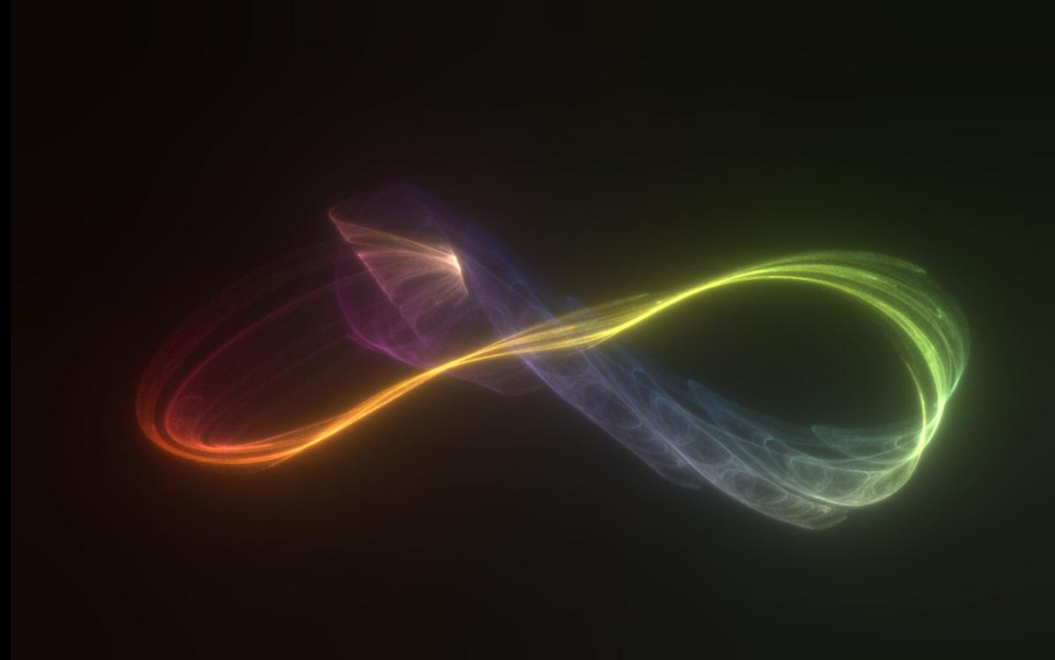
- The phases of Software Testing Life Cycle
  - Requirement
  - Planning
  - Analysis
  - Design
  - Implementation
  - Execution
  - Conclusion



# Phases of the STLC (2)

- Conclusion phase
  - Includes the reporting stage
  - Depends on whom you are reporting, different kind of reports are provided
- Closure phase
  - Check for completion of the test.
  - Do lesson learnt meeting and documents

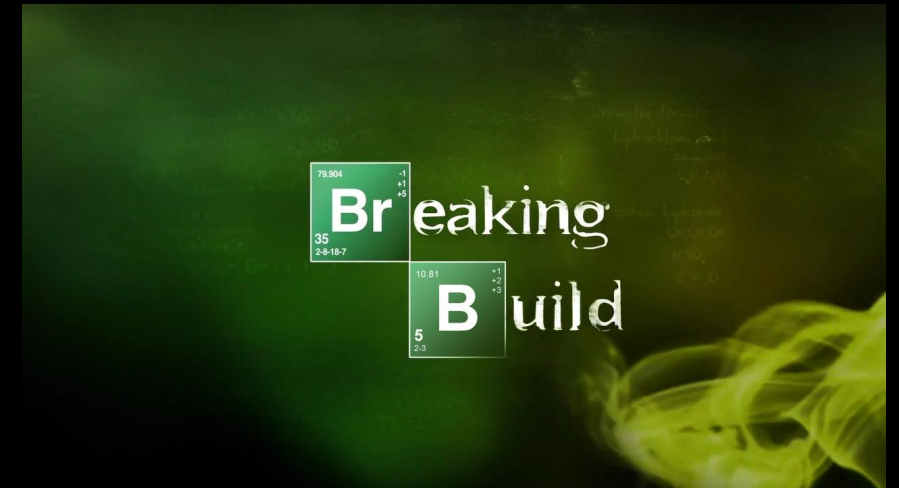




# Continuous Integration

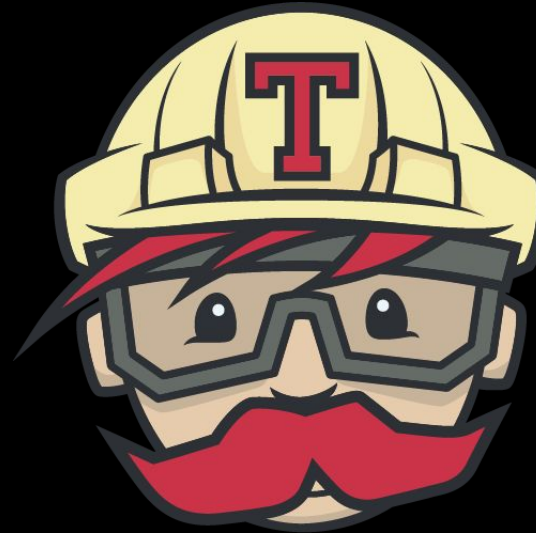
# Continuous Integration

- A practice of merging all developers' working copies with a shared mainline
- Its due for about 25 years and evolved to an automated process ensuring the “clean build” concept
  - Triggered by a commit
  - Unit tests
  - Integration tests



# CI Tools

- Continuous Integration Tools:
  - Jenkins
  - TravisCI
  - CircleCI





# Summary

- What is SDLC?
- Phases of the SDLC
- Popular Methodologies
  - Waterfall, Agile, Kanban
- Testing Life Cycle
- Phases of the STLC
- Continuous Integration



# Software Testing Lifecycle



## Questions?



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