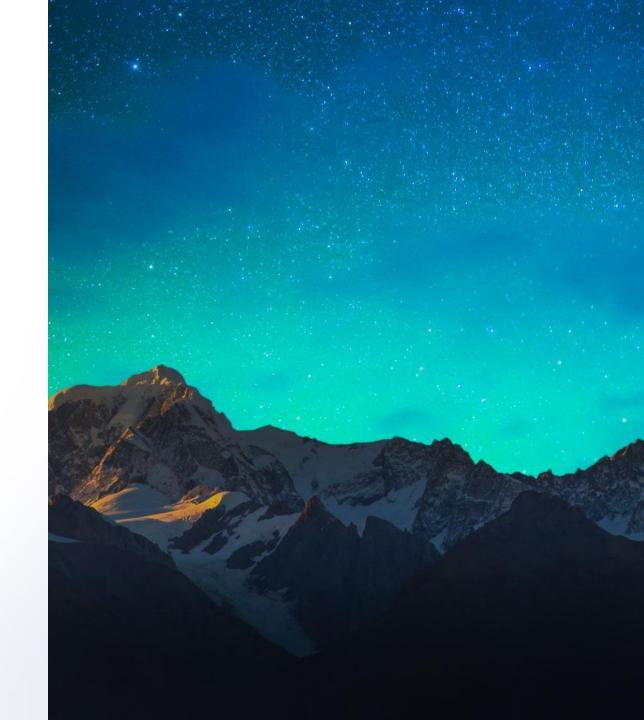# Software Development Lifecycle

Hovag Abramian

Session III

Outline

We are going to learn about:

- Software Development Lifecycle

- Software Project Management

- Related Tools

Learning Objectives

At the end of the session, you will be able to:

- Identify the stages of SDLC

- Categorize processes and artifacts relevant to each stage

- Define the meanings of common terminology

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Software Development Lifecycle

- Defines steps and responsibilities

- The steps can overlap

- The steps might need revisiting

Software Development Methodologies

- Evolution and Necessity

  - No methodology - Cowboy coding

  - Traditional methodology - Waterfall

  - Agile methodologies - Scrum, Kanban

- Artifacts

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Waterfall

- **Concept**
- Requirements
- Design
- Implementation
- Integration
- Maintenance

Feasibility Analysis

Can it be done?

Are the resources available?

Should it be done?

Buying vs. in-house

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Waterfall

- Concept
- **Requirements**
- Design
- Implementation
- Integration
- Maintenance

Functional Requirements

Technical Requirements

Use Cases

Terms of Reference

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Waterfall

- Concept   Architecture

- Requirements   Hierarchy

- **Design**   Diagrams

- Implementation   Design Level Use Cases

- Integration

- Maintenance

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Waterfall

- Concept
- Requirements
- Design
- **Implementation**
- Integration
- Maintenance

Coding

Unit Testing

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Waterfall

- Concept
- Requirements
- Design
- Implementation
- Integration
- Maintenance

Integration Tests

Acceptance Tests

Load Test

Phased Deployment

A/B Testing

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Waterfall

- Concept
- Requirements
- Design
- Implementation
- Integration
- Maintenance

Feedback

Feature Requests

Bug Reports

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Waterfall Methodology

- Best Practices

- Example Projects

- Strengths

- Drawbacks

    - Changing requirements!

- Conclusion: Waterfall remains relevant

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Agile Methodologies - Scrum

- Requirements

- Inside-out vs Linear

- Sprint

- Stand-up meetings

  - Reflection and feedback

  - Planning

  - Obstacles

- Scrum master

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Testing

- Unit testing

- Integration Testing

- Subsystem Testing

- System Testing

- Regression Testing

- Alpha Testing

- Beta Testing

- Acceptance Testing

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Terminology

- Development Environment

- Development Server

- Test Environment

- Code Freeze

- Staging

- Production

- Deployment: Rollout, Rollback

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Lean Methodologies - Kanban

- Kanban is about tasks, scrum is about deliverables

- Philosophy

    - Continuous flow

    - In progress -> Done

    - Waste Reduction

- Kanban Board

- Ticketing Systems

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Lean Methodologies - Kanban

- Visualize the Workflow

- Limit your Work in Progress (WIP)

- Manage the Flow

- Implement Feedback Loops

- Make Process Policies Explicit

- Improve Collaboratively

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Tools

- Jira

- Git

- Microsoft Project

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References

1. Bennatan, E.M., (2000) "*On Time, Within Budget: Software Project Management Practices and Techniques*", Wiley

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