SOMNOG 7

Somali Network Operators Group

WORKSHOPS AND CONFERENCE

22 - 26 December, 2024

THEME:

Digital Public Infrastructure: Laying the Foundations for Somalia's Digital Future

Software Development Process

A Practical Guide to Building Professional Software

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Overview

Key topics we'll cover:

- Initiating a Software Project
- Necessary Documentation
- Starting Development
- Team Organization & Tooling
- Software Development Lifecycle
- Case Study and Q&A

Initiating a Software Project

- **Steps to Start**
  - Define the Problem Statement: what and why
  - Set Goals: clear, measurable objectives
  - Identify Target Users: who benefits
- **Key Deliverables**
  - Project Charter: goals, team, timeline
  - Requirement Gathering: functional & non-functional

Necessary Documentation

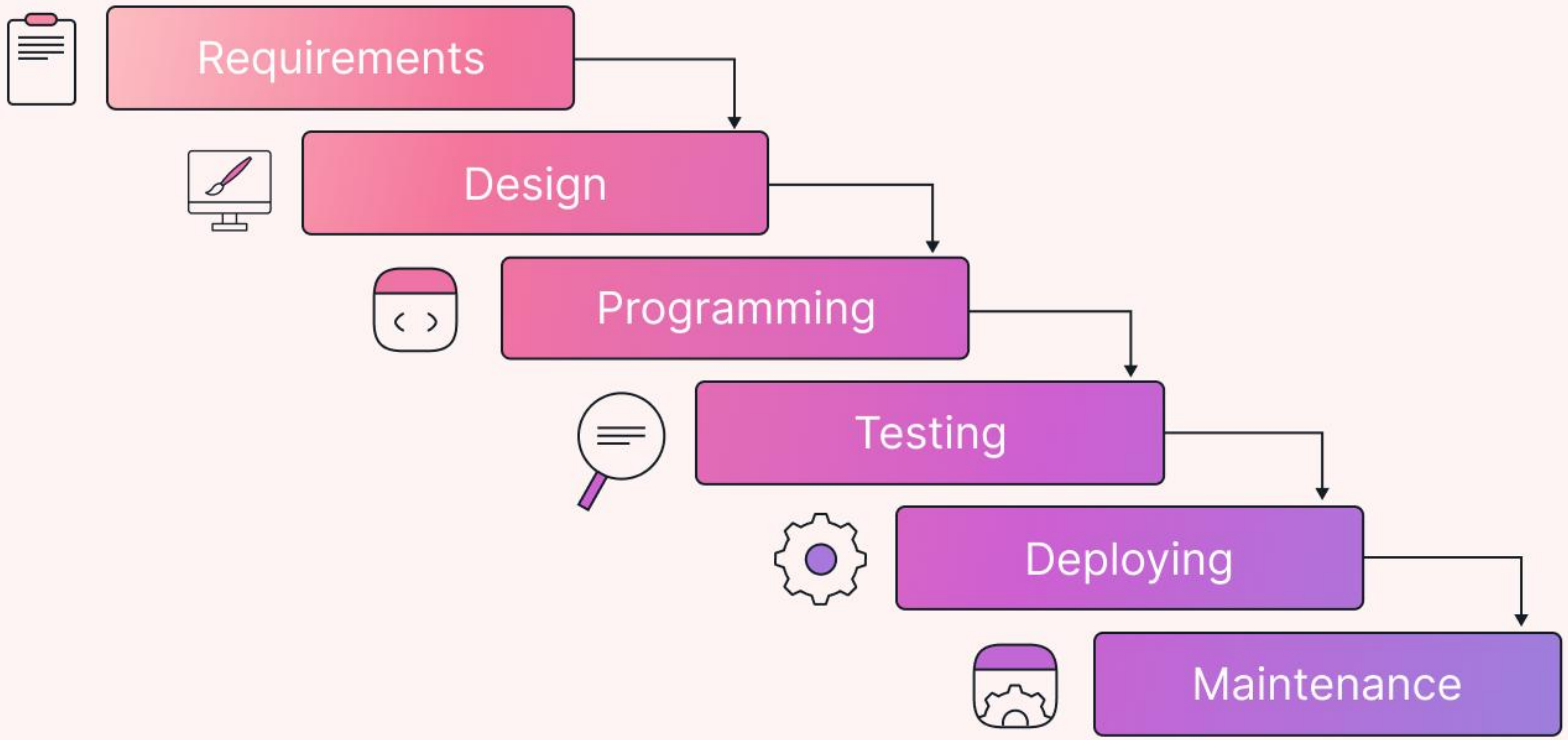
- **Before the development**
  - Business Requirement Document (BRD) -- High-level business needs and goals
  - Software Requirement Specifications (Tech stack, architecture, ERP, dependencies)
- **After the Development**
  - User Manuals / Instruction Manual
  - Developer Manuals / API Guide
  - Deployment guides / Database schemas / Training materials

Starting Development

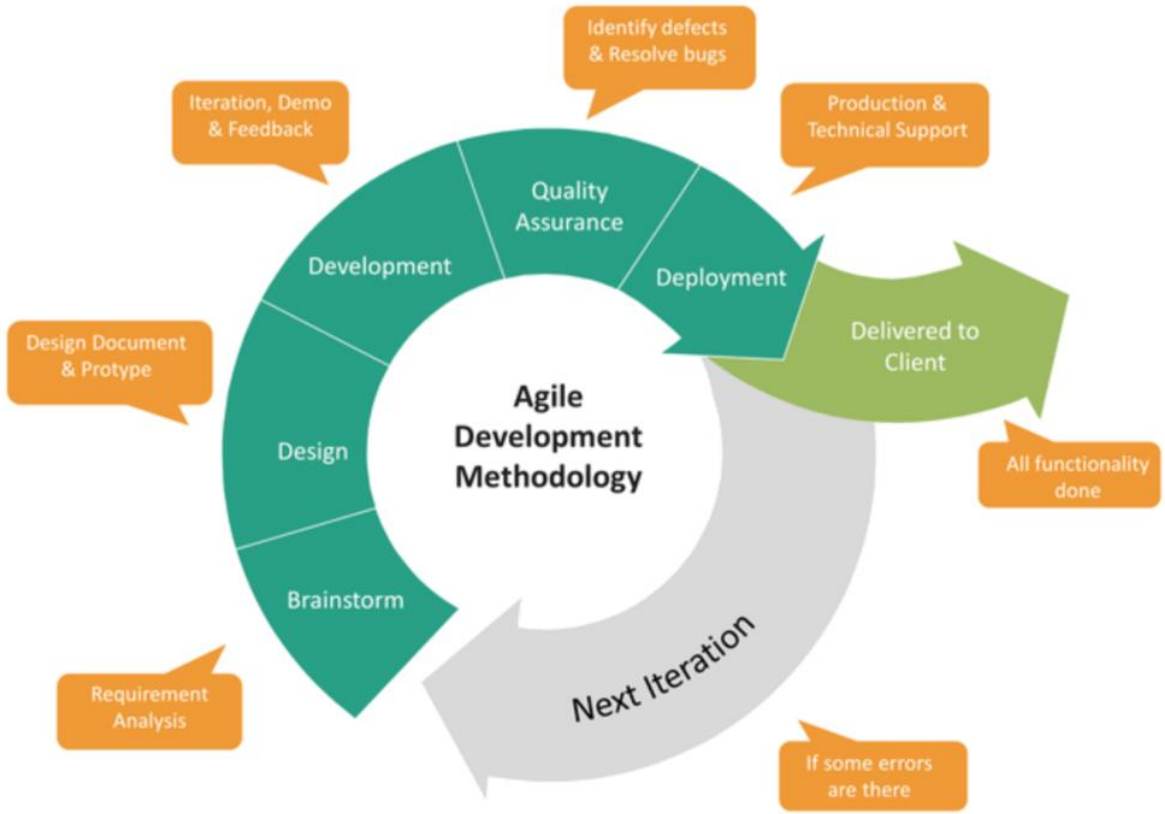
Choosing a Methodology

- Waterfall: linear, sequential
- Agile: iterative, flexible, collaborative

Waterfall Model



Agile Model



Why Agile?

- Quick adaptation to changes
- Frequent feedback loops
- Incremental releases
- Sprint Planning, Execution, Review, Retrospective
- Faster delivery, continuous feedback, reduced risk

Team Organization

- **Designers:** user experience & visual design
- **Frontend Developers:** Develop frontend (React, Vue,Angular)
- **Backend Developers:** server-side logic, APIs (Java, NodeJS, Golang, Python,C#)
- **Mobile Developers:** native/cross-platform apps (Swift, Kotlin, Flutter)
- **Database Team:** (PostgreSQL/ MongoDB/Schemas)
- **DevOps Engineers:** CI/CD, infrastructure (Docker, Jenkins,Actions,Kubernates)

Choosing the Software Stack

- **Frontend**: React.js
- **Backend**: Node.js & Express
- **Database**: MongoDB
- **Mobile**: React Native

API Approaches

- REST vs. GraphQL
- GRPC

Tooling

- **Task Management:** Jira
- **Code Hosting:** GitHub / GitLab
- **Communication:** Slack
- **CI/CD:** Jenkins / GitHub Actions
- **Containerization:** Docker
- **Cloud:** AWS

Teamwork and Collaboration

- **Communication**

- Daily Standups (15 mins)
- Retrospectives: wins & improvements

- **Conflict Resolution**

- Focus on solutions, not blame

- **Peer review**

- Better code quality through shared expertise

Closing and Q&A

Key Takeaways

- Start with clear goals & documentation
- Embrace Agile for iterative improvements
- Use the right tools for collaboration
- Build a culture of continuous learning

Q&A Session

- Ask questions, discuss experiences

Appendix and Resources

Recommended Books:

- The Clean Coder (Robert C. Martin)
- Clean Architecture (Robert C. Martin)
- Design Patterns -- *Elements of Reusable Object-Oriented Software*
- *The Pragmatic Programmer*

Online Tutorials & Communities:

- Official Websites
- Stack Overflow, GitHub

Local Meetups & Conferences

- Network with peers, attend workshops

Thank You!