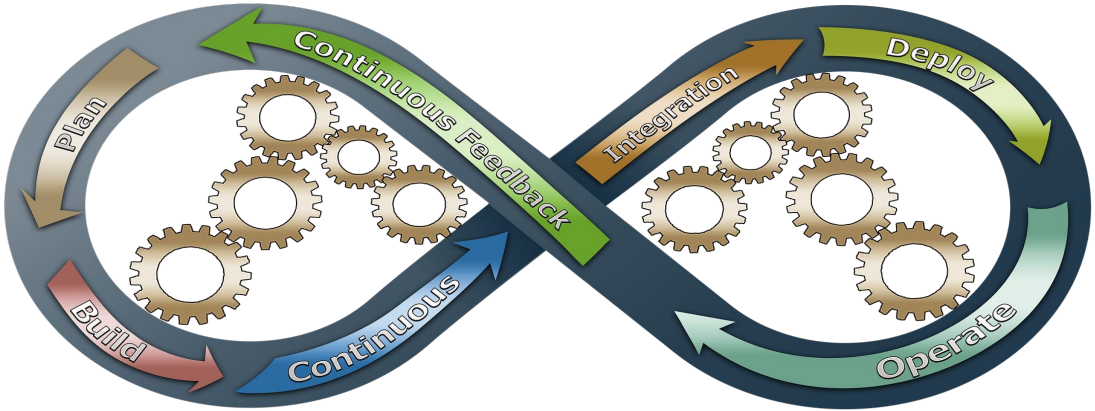
DevOps Tools and Services on AWS



AWS Refresher

- EC2
- S3
- VPC
- Lambda
- Cloudformation
- Cloudwatch
- IAM and security
- SNS

Waterfall, Agile and DevOps

https://www.thoughtworks.com/insights/blog/path-devops

https://www.guru99.com/waterfall-vs-agile.html

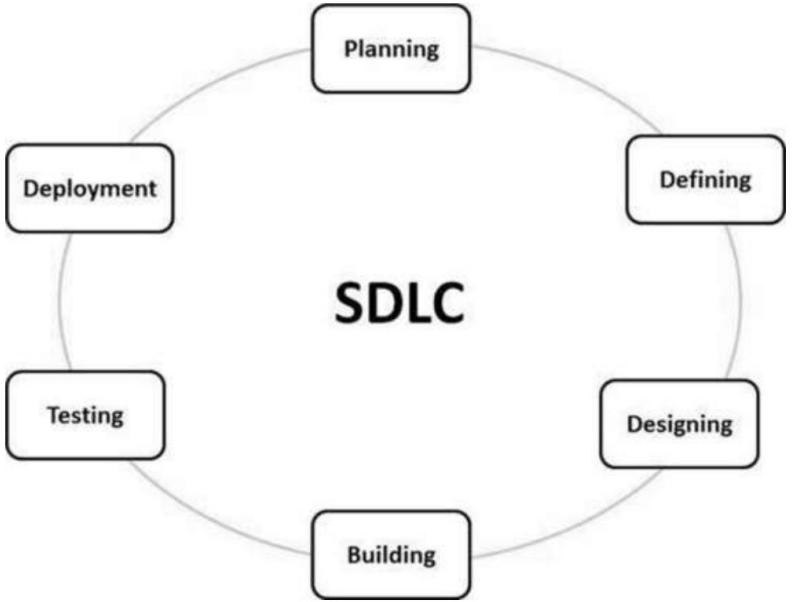
https://www.guru99.com/agile-vs-devops.html

SDLC

What is SDLC?

SDLC is a process followed for a software project, within a software organization. It consists of a detailed plan describing how to develop, maintain, replace and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process.

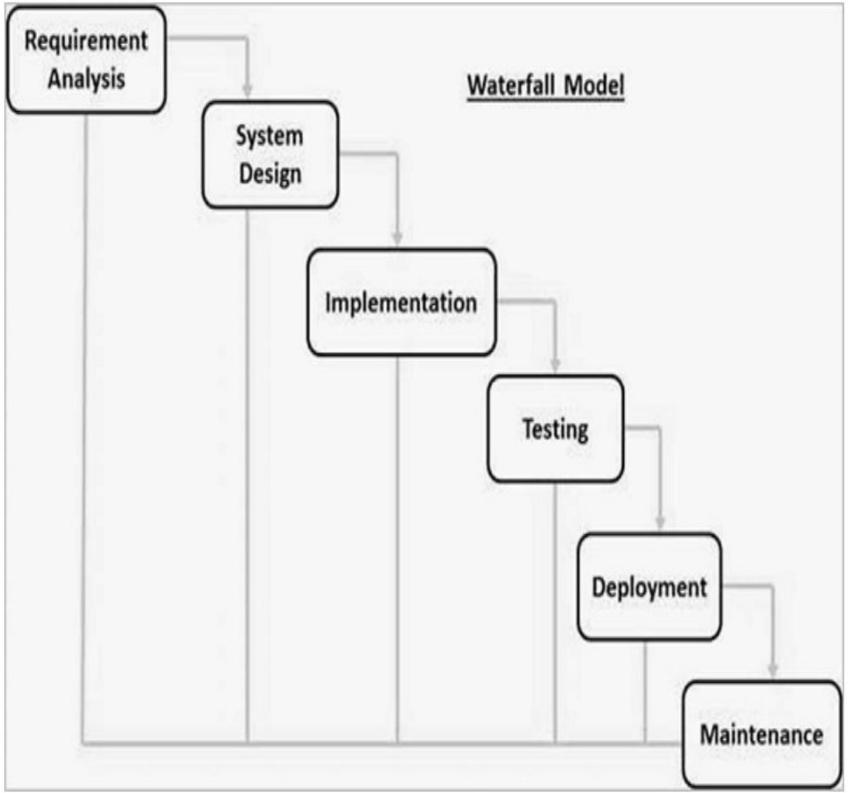
The following figure is a graphical representation of the various stages of a typical SDLC.



Most IT Software delivery in the Old days

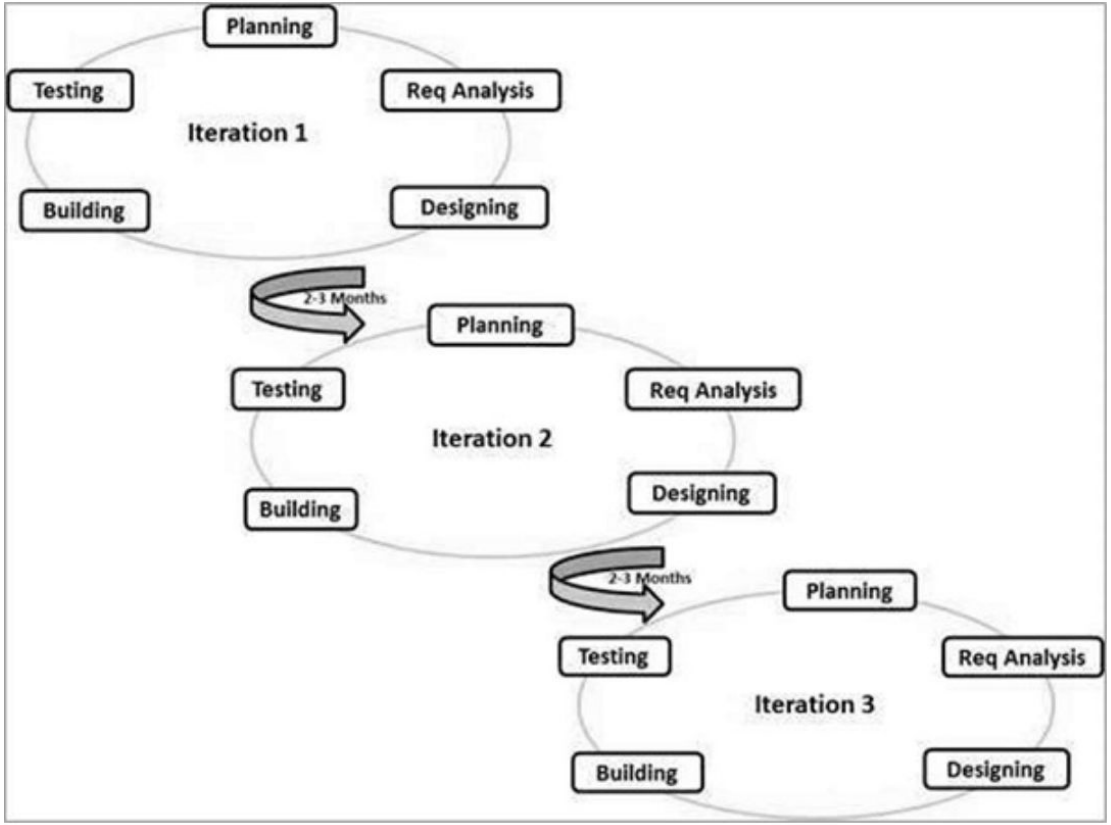
Waterfall method:

There is no scope of changing the requirements once the project development starts.



Agile SDLC

Agile is quite a flexible method which allows changes to be made in the project development requirements even if the initial planning has been completed.



Waterfall, Agile, Devops

- Agile methods brought shorter cycles and faster integration of codebase.
- Still, code wasn't in production, it was just being integrated.
- Devops solves this problem.

Stakeholders and communication chain in a typical IT process.

Agile addresses gaps in Customer and Developer communications

DevOps addresses gaps in Developer and IT Operations communications

What is DevOps

DevOps is the combination of **cultural philosophies, practices, and tools** that increases an organization's ability to **deliver applications and services at high velocity**: evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes. This speed enables organizations to better serve their customers and compete more effectively in the market.

What Does a DevOps Culture Look Like?

Even with the best tools, DevOps is just another buzzword if you don't have the right culture.

The primary characteristic of DevOps culture is **increased collaboration** between the roles of development and operations. There are some important cultural shifts, within teams and at an organizational level, that support this collaboration.

- Developers and Ops team are co-located
- Share responsibilities to get things done & Maintain systems
- Don’t blame each other , work together to solve problems
- Automate to focus on high value tasks

https://www.ca.com/en/blog-automation/what-is-devops-culture.html

https://martinfowler.com/bliki/DevOpsCulture.html

DevOps

The DevOps movement is focused on **delivering software faster and more efficiently**, without breaking things as often. To meet these goals, businesses need to change **organizational culture and structure**, as well as the **tools and processes** they use.

Developers and Operations team work together. Communicate well . This enables software to be delivered faster.

DevOps Introduction Reference

https://aws.amazon.com/devops/what-is-devops/

CONTINUOUS INTEGRATION

Continuous Integration (CI) is a development practice that requires developers to integrate code into a shared repository several times a day. Each check-in is then verified by an automated build, allowing teams to detect problems early.

By integrating regularly, you can detect errors quickly, and locate them more easily

Reference: https://www.thoughtworks.com/continuous-integration

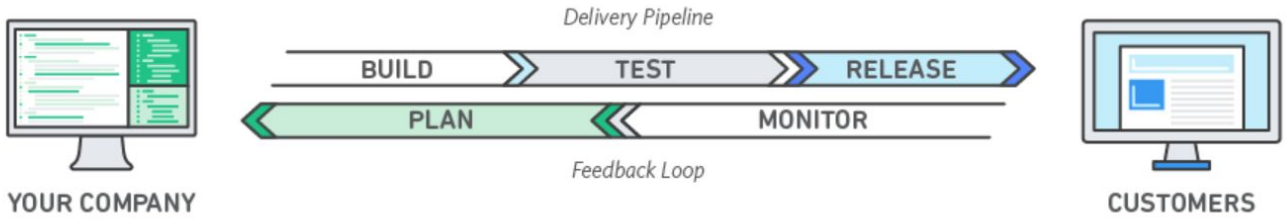
CONTINUOUS DELIVERY

Continuous Delivery is a software development discipline where you build software in such a way that the software can be released to production at any time.

You're doing continuous delivery when:

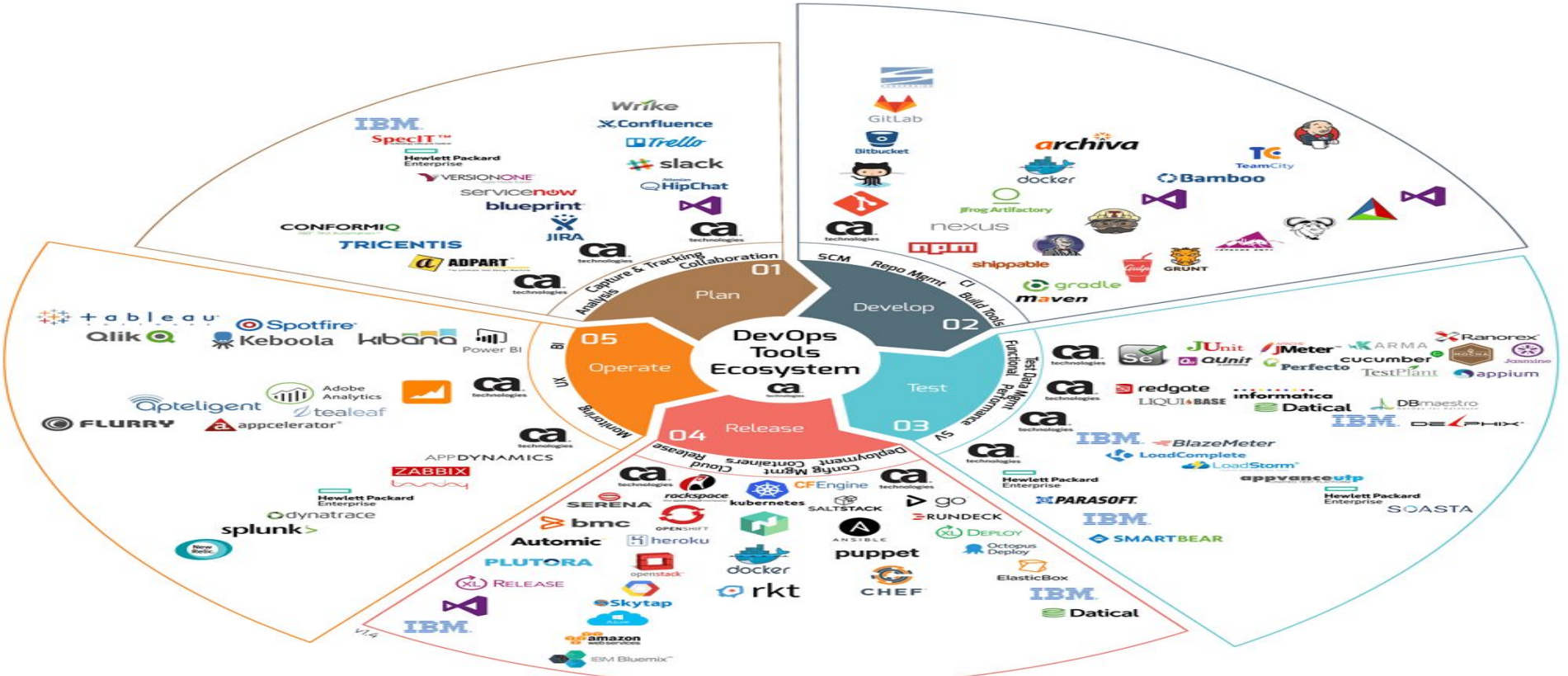
- Your software is deployable throughout its lifecycle
- Your team prioritizes keeping the software deployable over working on new features
- Anybody can get fast, automated feedback on the production readiness of their systems any time somebody makes a change to them
- You can perform push-button deployments of any version of the software to any environment on demand

https://martinfowler.com/bliki/ContinuousDelivery.html


Delivery Pipeline
BUILD
TEST
RELEASE
PLAN
MONITOR
Feedback Loop
YOUR COMPANY
CUSTOMERS

DevOps Services we'll look at

1. Infrastructure as code:Cloudformation (Day 1)
2. Infrastructure as code: Terraform
3. Monitoring and Logging: Cloudwatch Metrics + Logs
4. SCM: Git and Github
5. Serverless Automation: AWS Lambda
6. Configuration Management: Ansible
7. Continuous Integration: Jenkins
8. ChatOps: Slack
9. Alerting : SNS
10. API Automation: AWS Command Line Interface, boto3 AWS SDK
11. Containers: Docker



https://dzone.com/articles/the-ultimate-devops-tools-ecosystem-tutorial-part-2

Every companies have different combo of tools

Most of the tools in the previous slides are open source. We can freely experiment. There are paid alternatives that abstract a lot of management.

A lot of companies combine free and paid tools.

Intro to git

What is git?

https://git-scm.com/book/en/v1/Getting-Started-Git-Basics

Why use git?

LAB 1:

Let’s create a git repo. And push to a remote origin.

1) Create a github account
2) Create a repo and clone it
3) Add some files locally
4) Stage changes, Commit, Push to remote Repo