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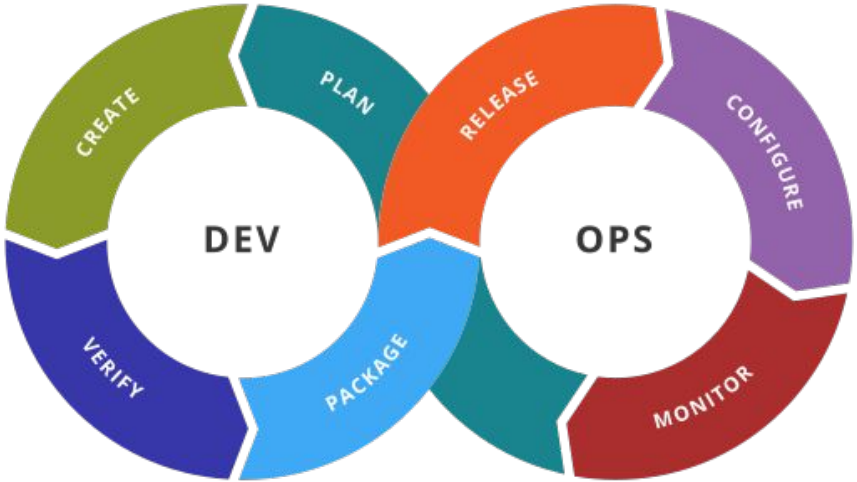

Introduction to DevOps

DevOps

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- **DevOps** is a culture of human communication, technical processes and tools
- **DevOps** is breaking barriers between **Developers and Operations** by automating processes, in order **to build, test, and release software faster and more reliably.**

Why DevOps?

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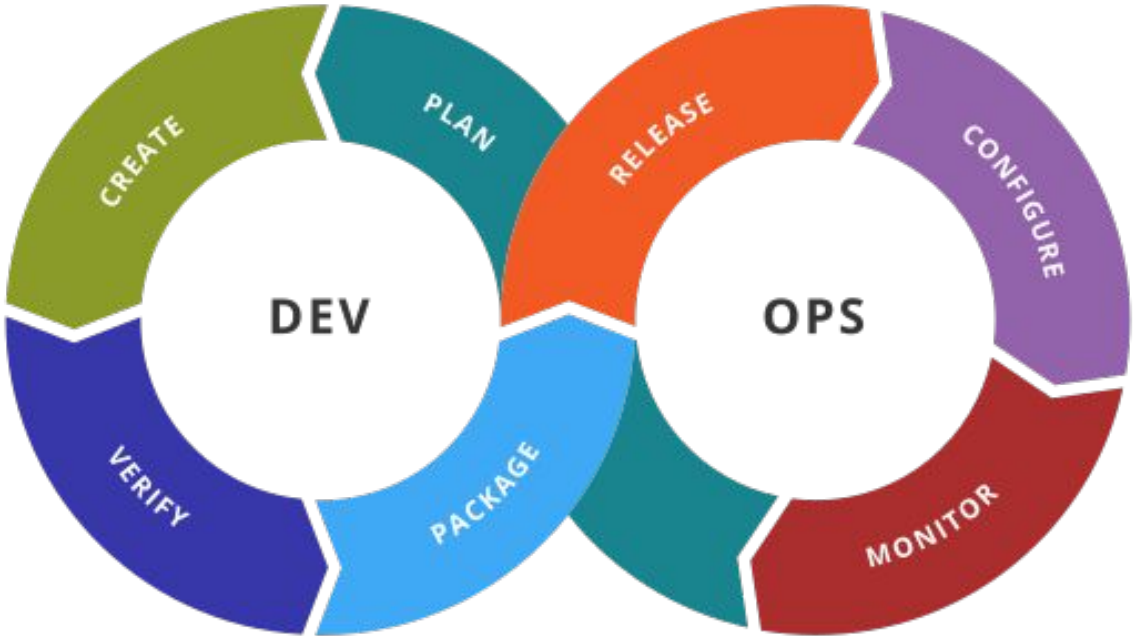
- Faster Time To Market
- Recovery time is reduced
- Problems are easier to detect
- System is overall more stable
- (Most) Repetitive tasks are automated
- You have less and less time available as the workload increases. Automation is essential

DevOps life cycle



Site Reliability Engineering (SRE)

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- SRE implements DevOps

DevOps	SRE
Reduce organization silos	Using the same tools and techniques
Accept failure as normal	Have a formula for balancing accidents and failures against new releases
Implement gradual change	Encourage moving quickly by reducing costs of failure
Leverage tooling & automation	Minimizing manual systems work to focus on efforts that bring long-term value to the system
Measure everything	Measuring availability, uptime, outages, toil, etc.

SRE: SLI, SLO, SLA

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- **Service Level Indicators (SLI)**

  Metrics over time (latency, throughput of requests per second, or failures per request)

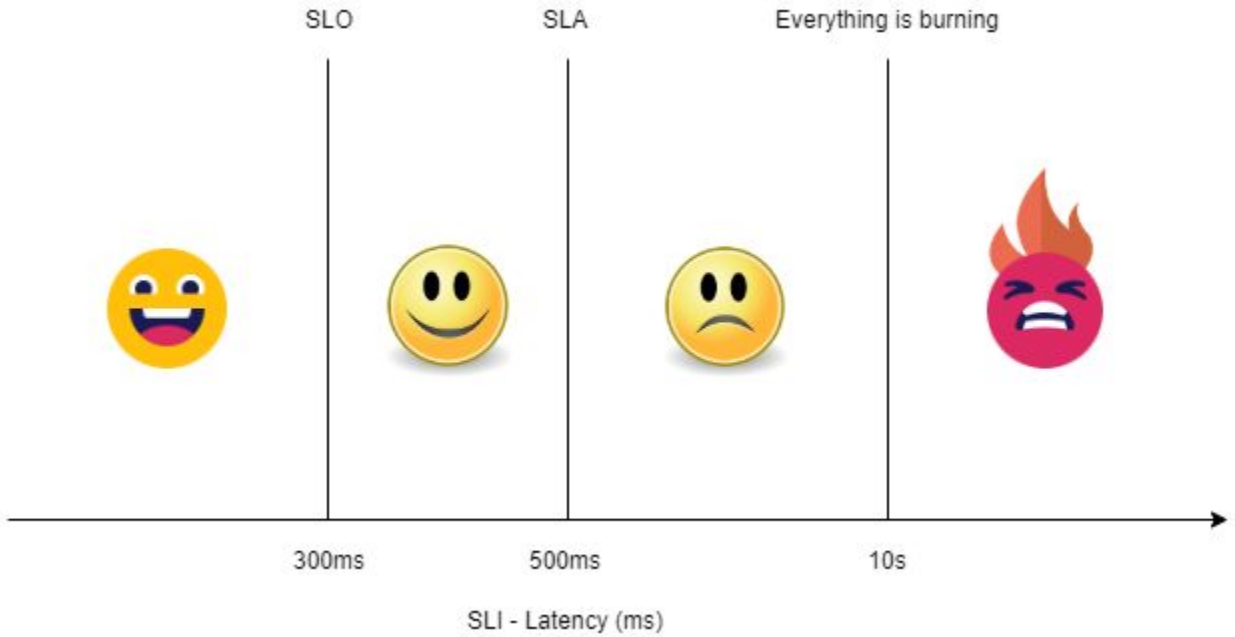
- **Service Level Objectives (SLO)**

  Targets for the cumulative success of SLIs over a period ("last 30 days" or "this quarter")

- **Service Level Agreement (SLA)**

  Promise by a service provider to a service customer about availability. Usually less than SLO.

SRE: SLI, SLO, SLA



Back to the history

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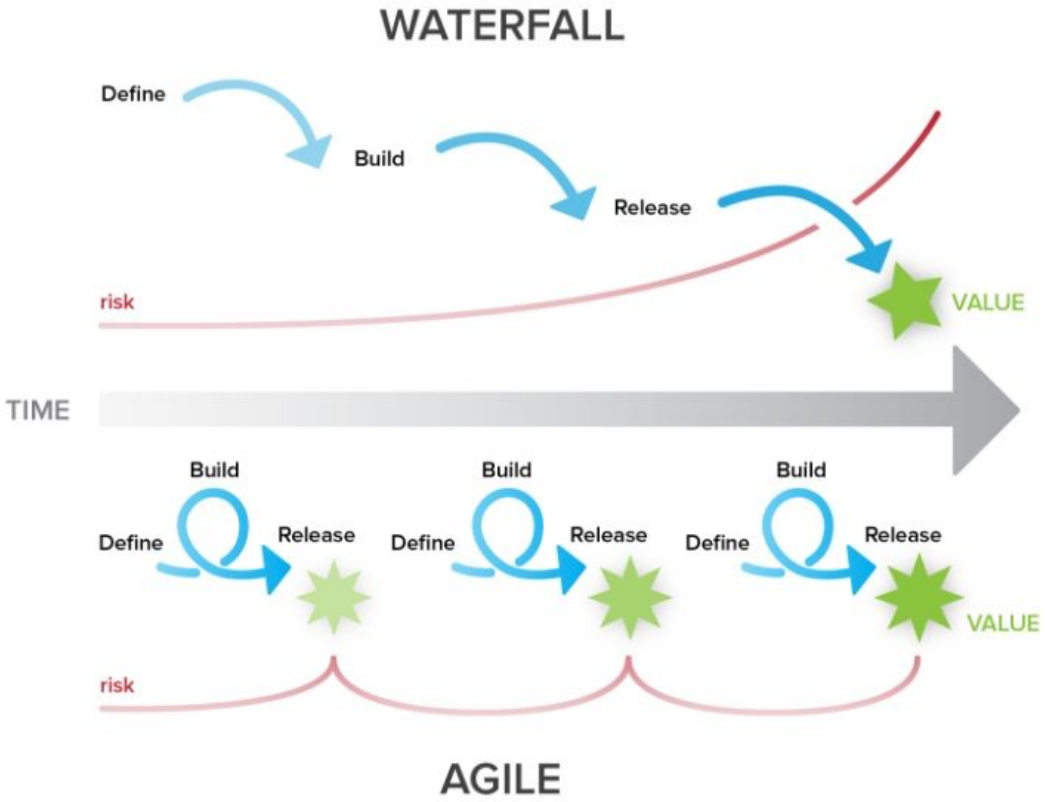
- Companies were focused on planning and documenting their software development cycles
- Agile Manifesto in 2001 - https://agilemanifesto.org/
- Agile principles were applied to software development
- In 2014, we started speaking about DevOps (in Site Reliability Engineering books)

Agile vs Waterfall



The Agile Manifesto

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We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

Agile Principles

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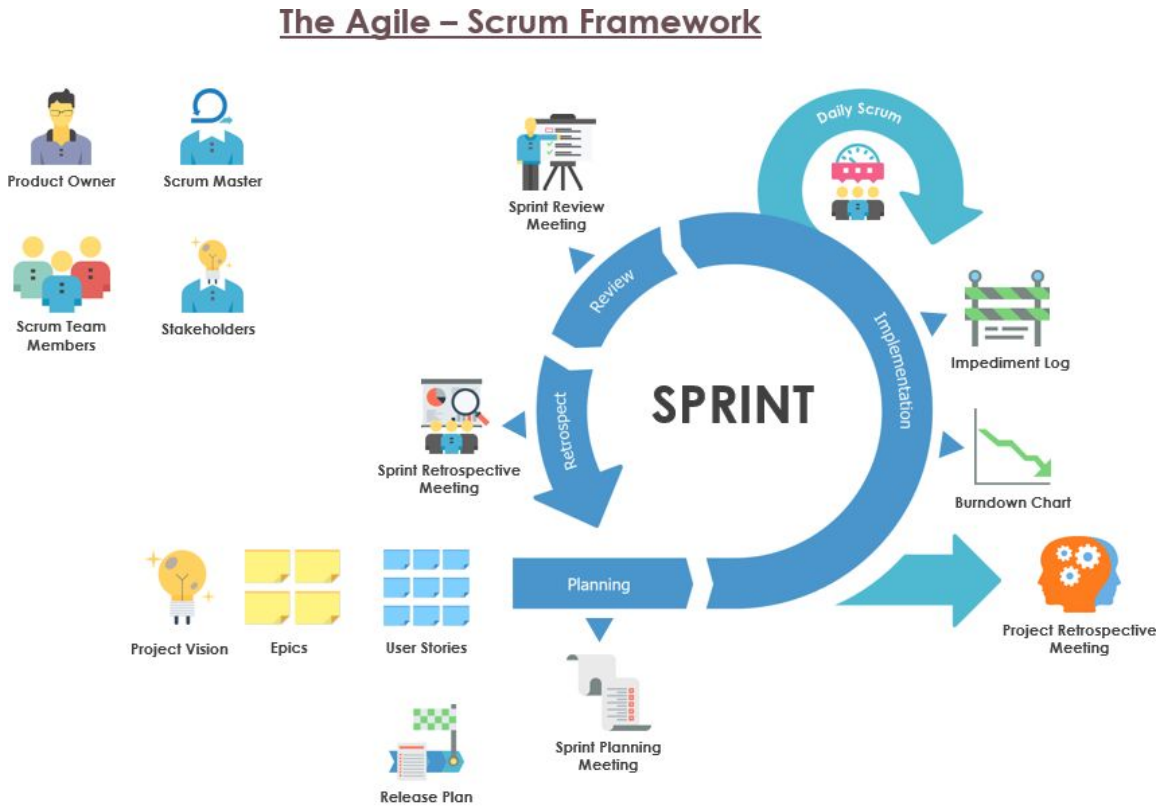
- Customer satisfaction is top priority
- Project requirements can change
- Do frequent deliveries
- Business & Devs must collaborate throughout the project
- Project actors must be motivated
- Prefer face-to-face conversations
- A working software is the main measure of progress
- Project pace should be sustainable and be maintained
- Pay attention to technical aspects and design
- Keep it simple
- Teams should be self-organized
- Reflect on the progress and process used regularly

Scrum



Scrum Guide - https://scrumguides.org/scrum-guide.html

DevOps in action: CI/CD

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CI/CD - Continuous Integration & Continuous Delivery

- brings automation into the DevOps life cycle
- less manual work
- reduces the chance of human error
- more business efficiency

CI/CD

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- **Continuous Integration (CI)** - a practice in which members of a team integrate their work frequently.
- **Continuous Delivery (CD)** - a discipline where software is built in a manner that allows deploying to customers at any time.
- **Continuous Deployment (CD)** - this **extends Continuous Delivery** by automating the deployment process so that code is automatically deployed to production after it passes automated testing.

CI/CD pipeline

CI/CD pipeline is a series of steps that must be performed in order to deliver a new version of software.