Cloud native buzzword bingo Vol. 1

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2018-12-20

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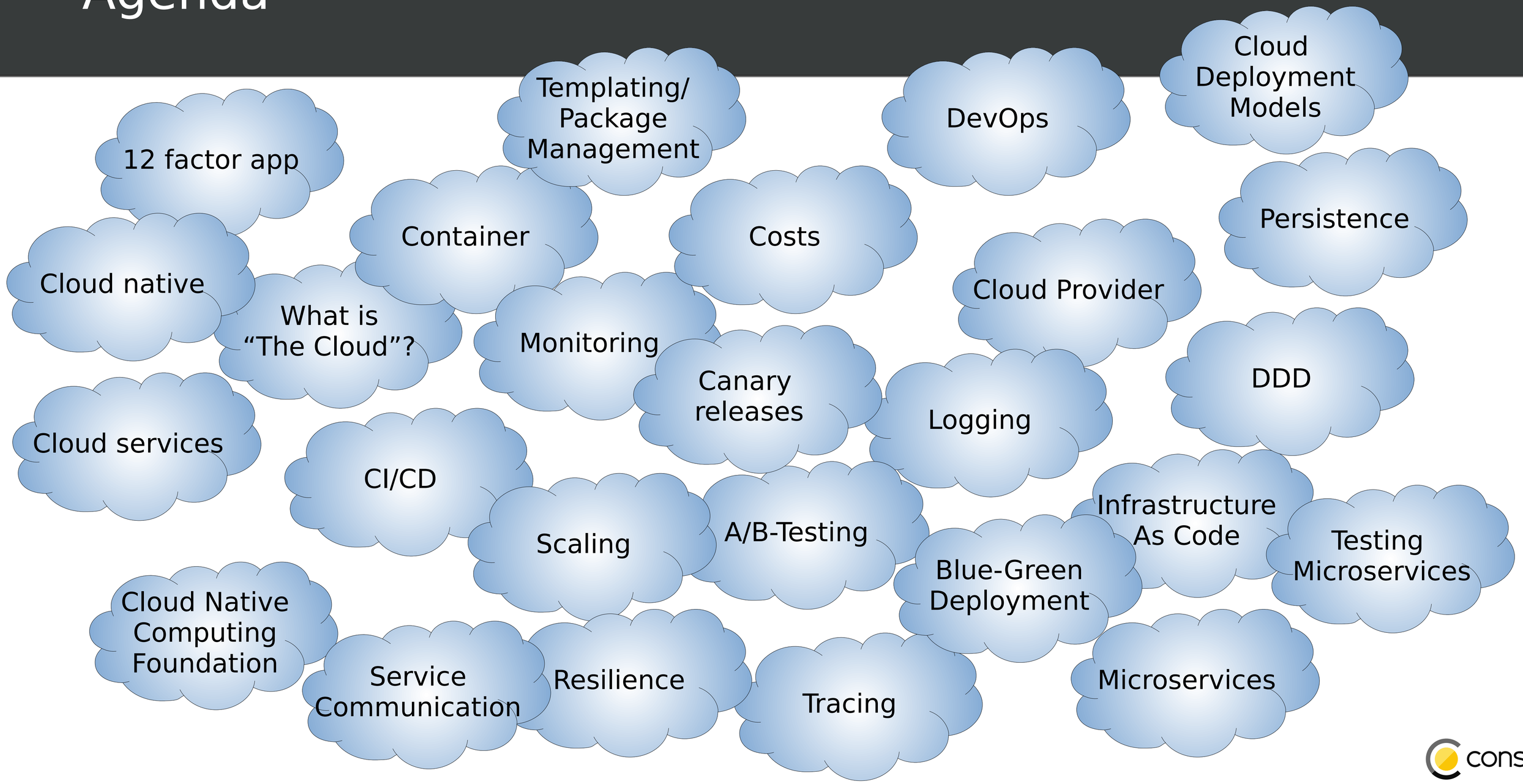

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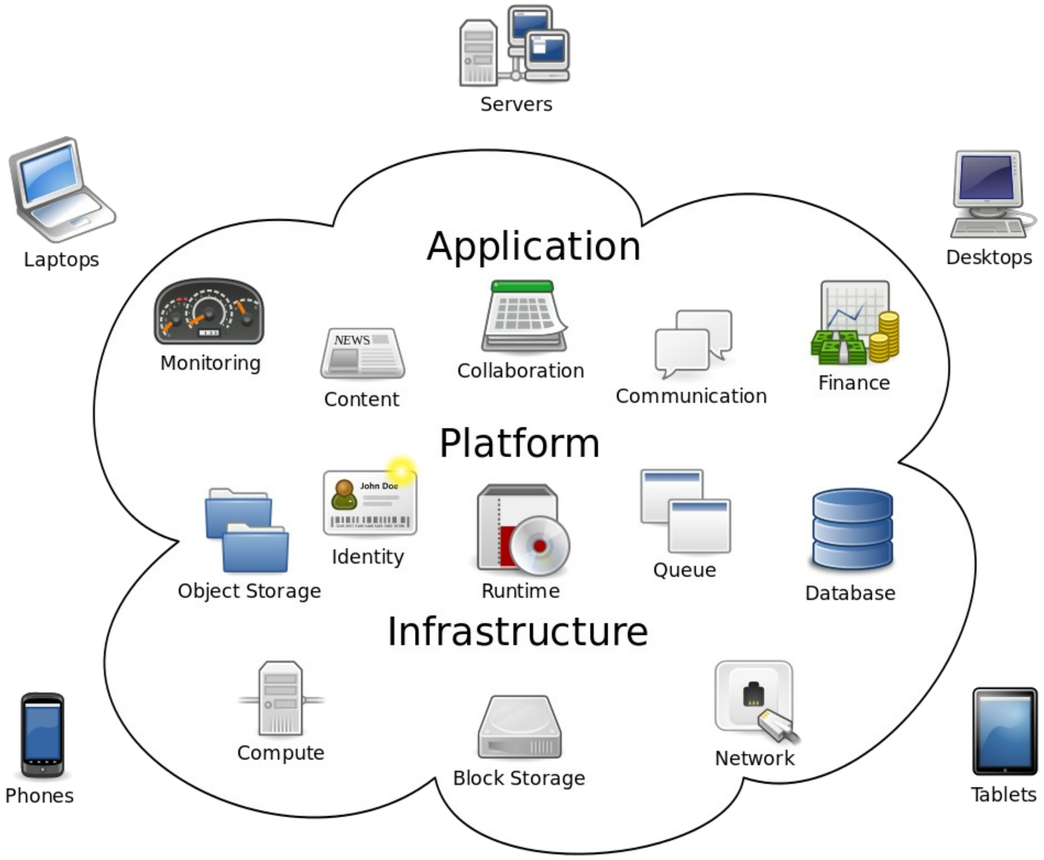
What is „The Cloud“?

Winner of the 2017 Preakness Stakes



Cloud computing

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What is „The Cloud“?

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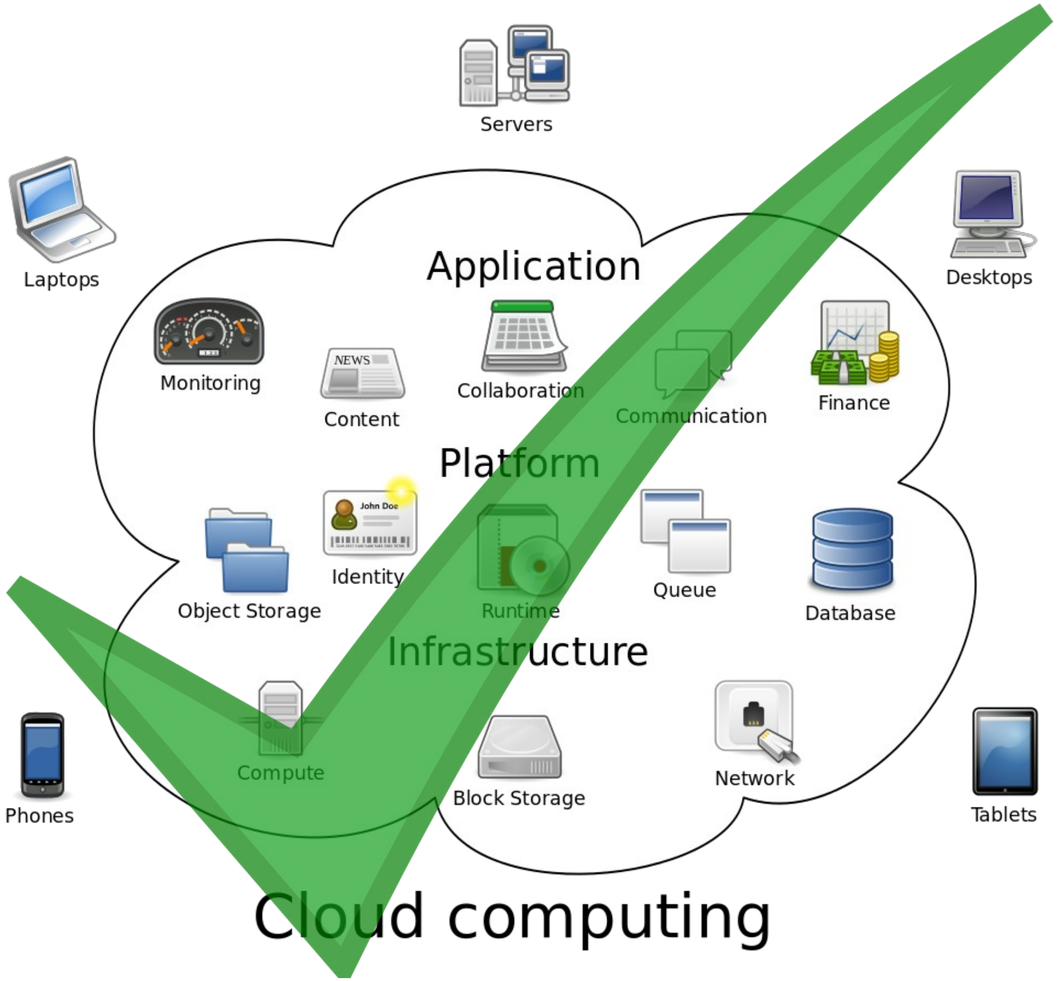

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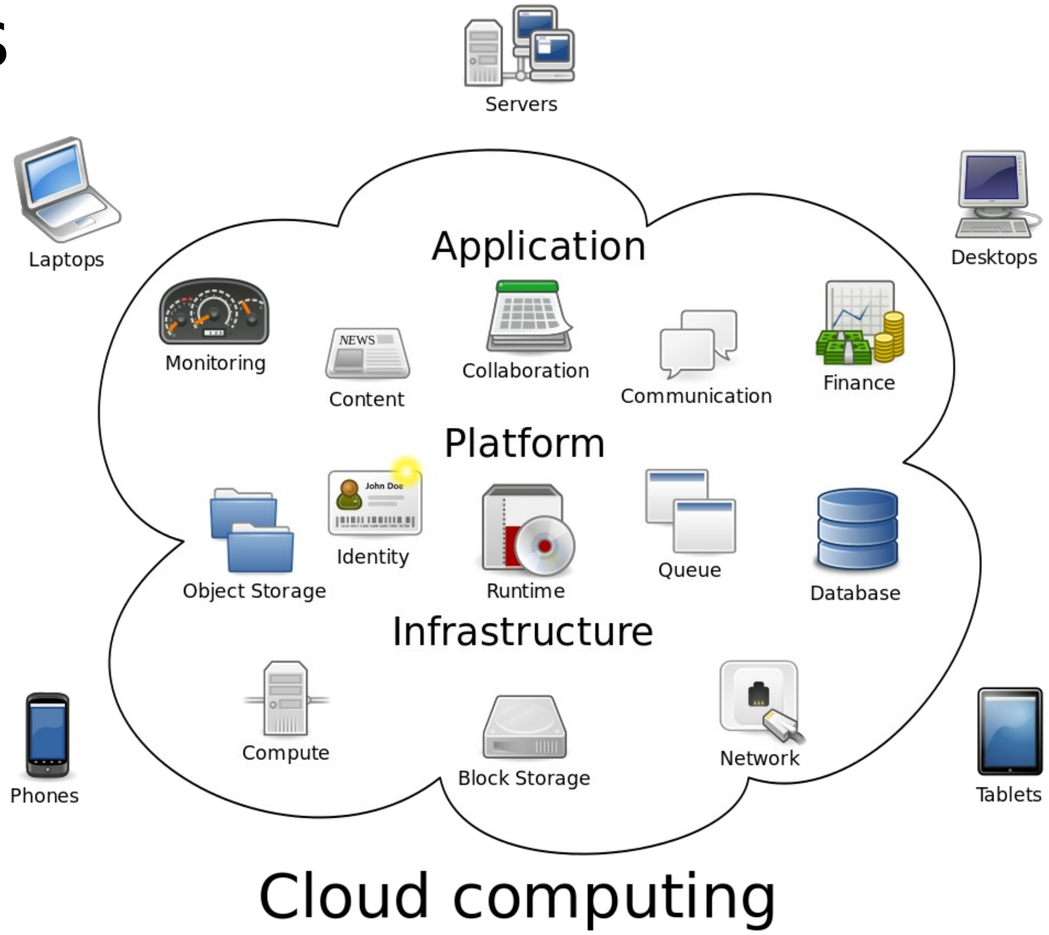
What is „The Cloud“?

- Shared computation ressources
- Highly configurable systems
- Providing abstract services
- Connected via network
- No local setup



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The Cloud in 2019

„Cloud computing continues to evolve from a market disruptor to the expected approach for IT.“

„Ignoring the cloud is no longer an option.“

Gartner

The Cloud in 2019

„As we approach 2019, software organizations of all industries will need to come to grips with the reality that working in siloed organizations, managing waterfall projects, and resisting the jump to the cloud will be the fast track to death.“

Forrester

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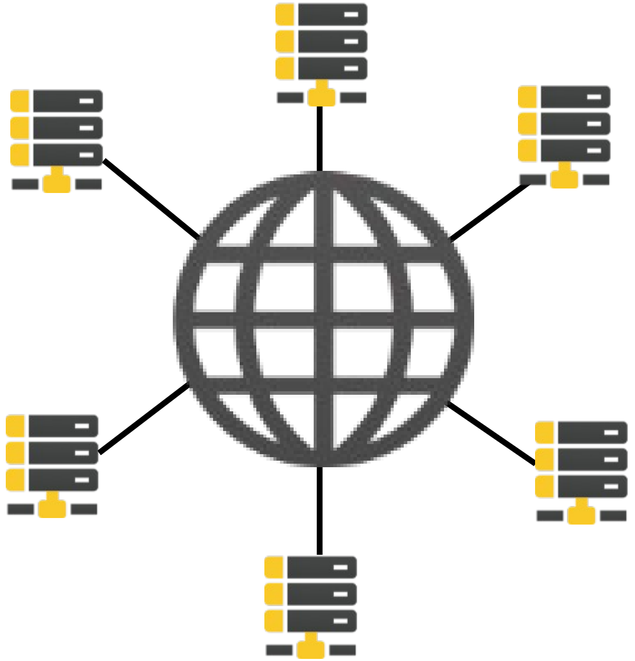
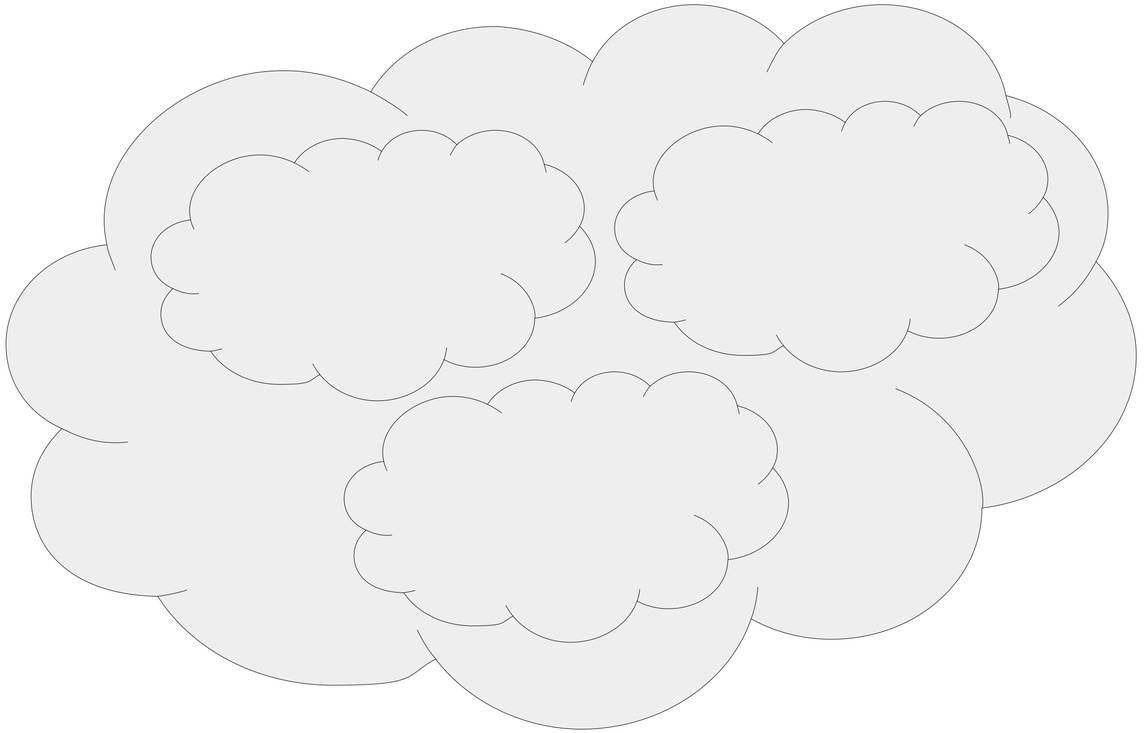
Cloud deployment models

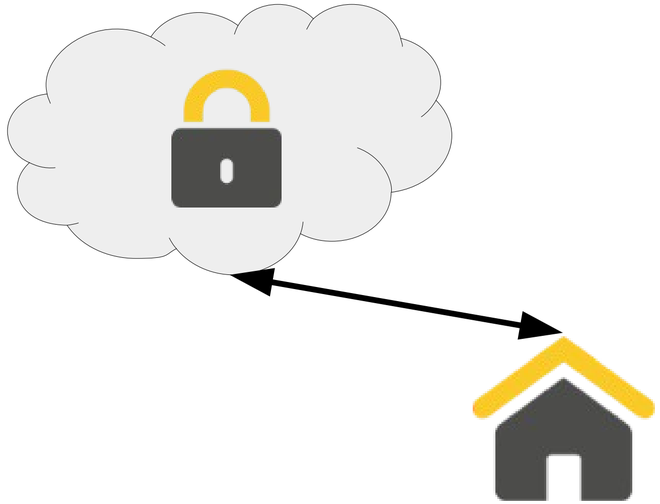
- Private cloud
- Public cloud
- Hybrid cloud
- Multi cloud
- Some more... not today



Cloud deployment models – Private Cloud

- A cloud operating for one organization
- Self managed or as a service
- Hosted internally or externally
- As more you do on your own, as more expencive it gets





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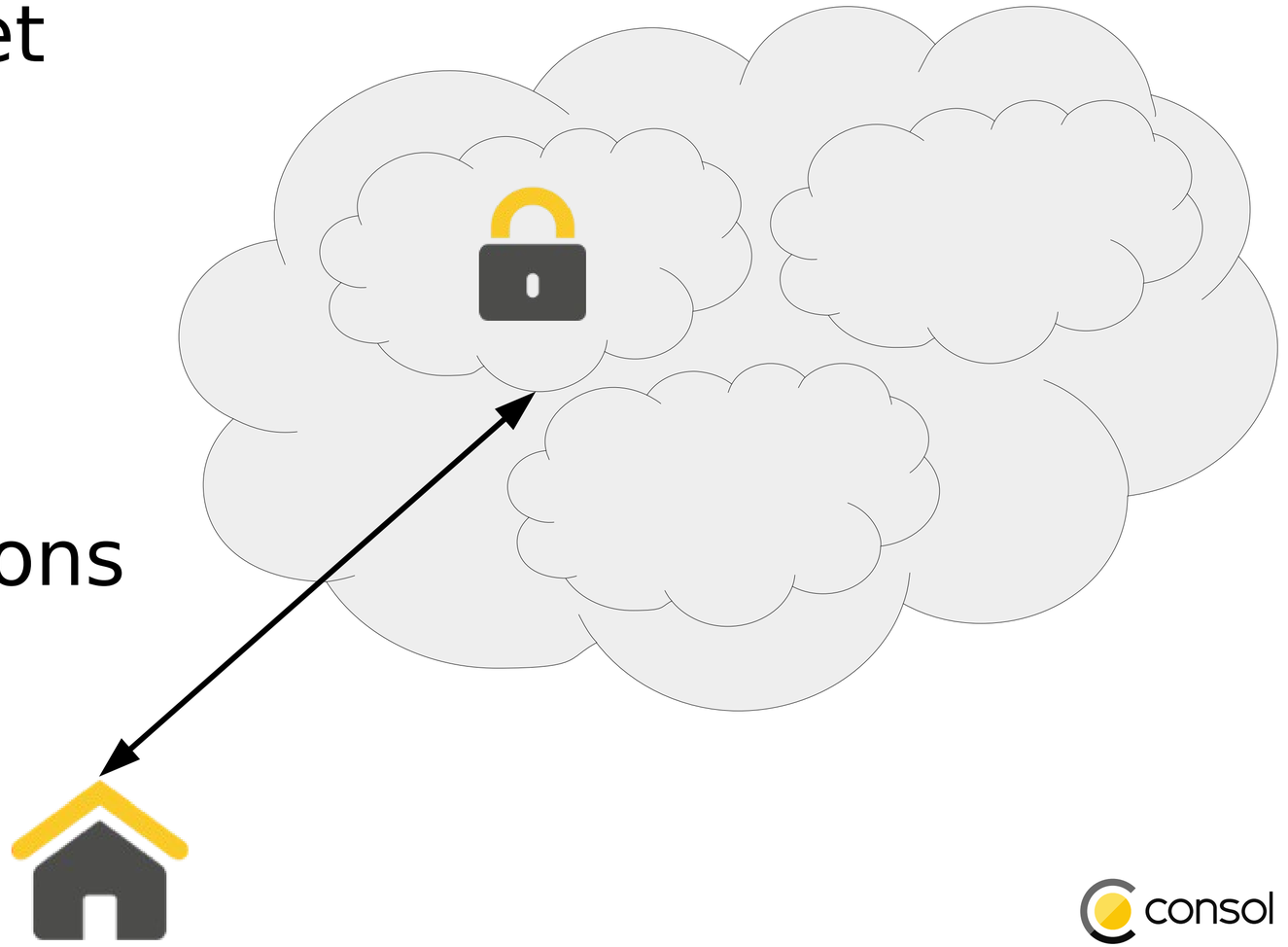
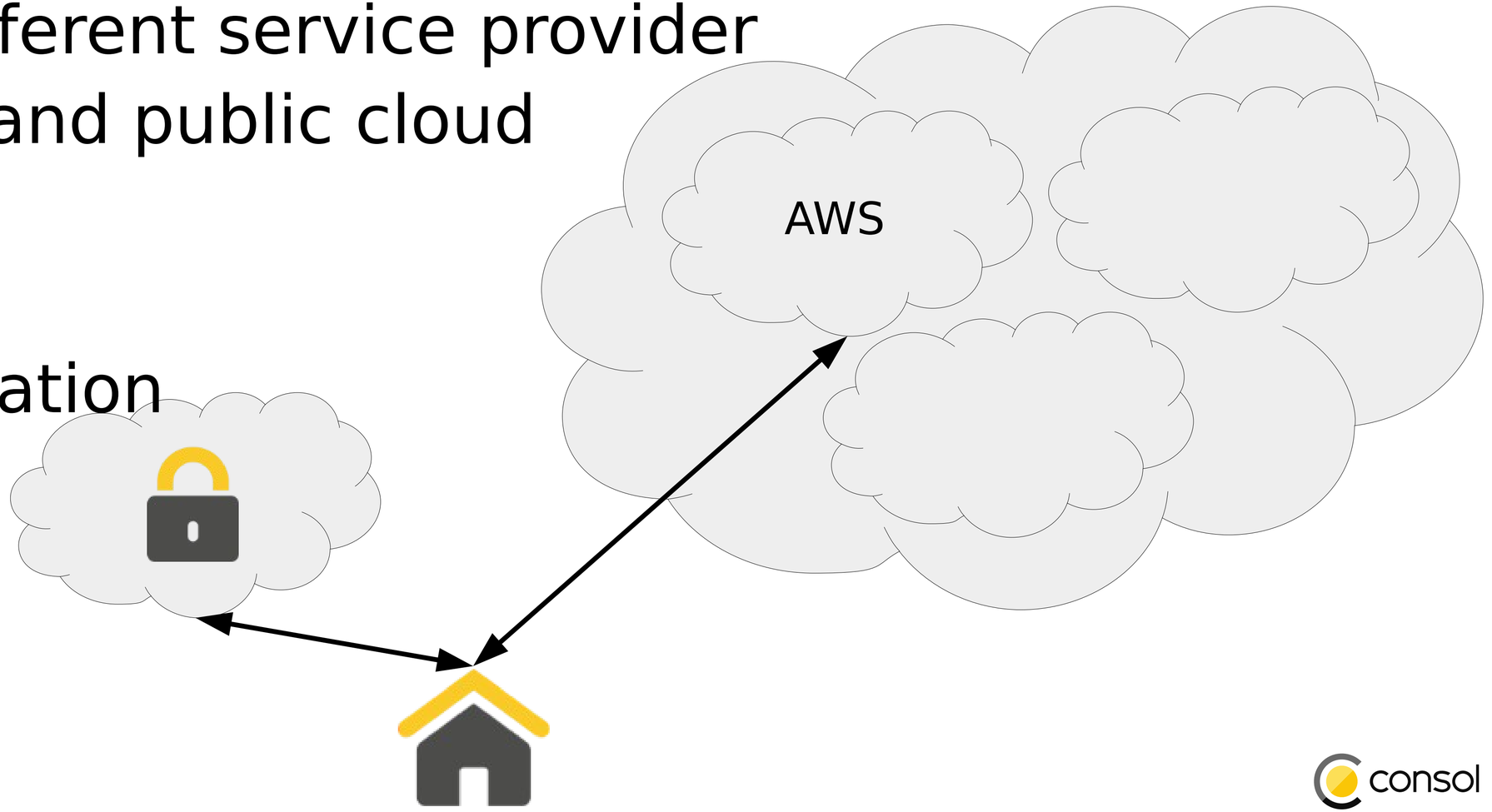
Cloud deployment models – Public Cloud

- A cloud operating for multiple organization
- Accessible over the Internet
- Separated via network Configuration
- Managed by third party
- Hosted externally
- Different security implications
  - Untrusted network



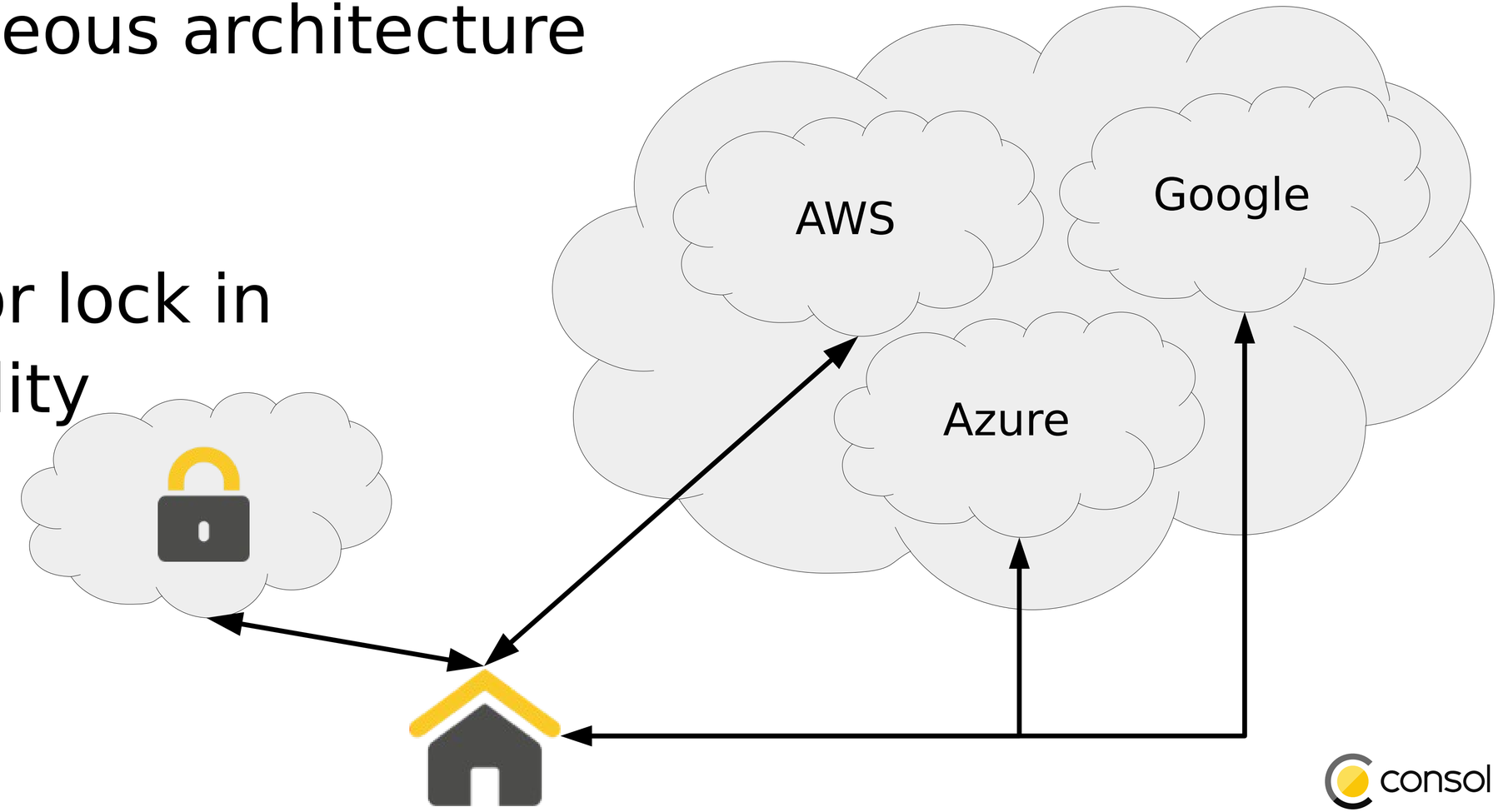
Cloud deployment models – Hybrid Cloud

- Mix between different models
- May include different service provider
- Mostly private and public cloud
- Use cases:
  - Cloud bursting
  - Security separation



Cloud deployment models – Multi Cloud

- Focus on using different providers
- One heterogeneous architecture
- Use cases:
  - Reduce risks
  - Prevent vendor lock in
  - Increse flexibility



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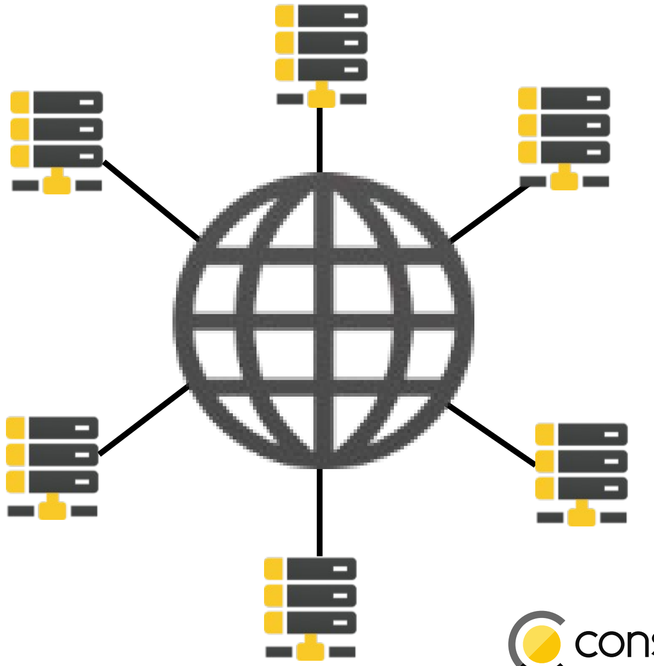
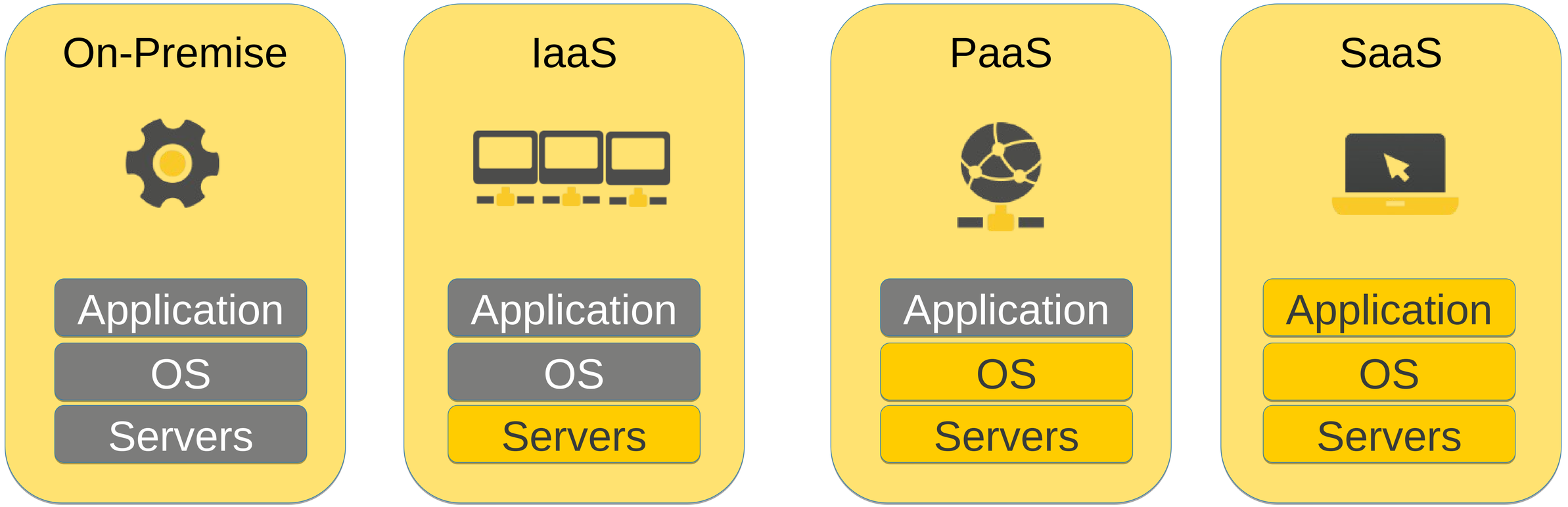
Cloud services

- Various models available – Everything as a Service (EaaS)
- Infrastrucute as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)
- Serverless
- Function as a Service (FaaS)



Cloud services – IaaS vs. PaaS vs. SaaS



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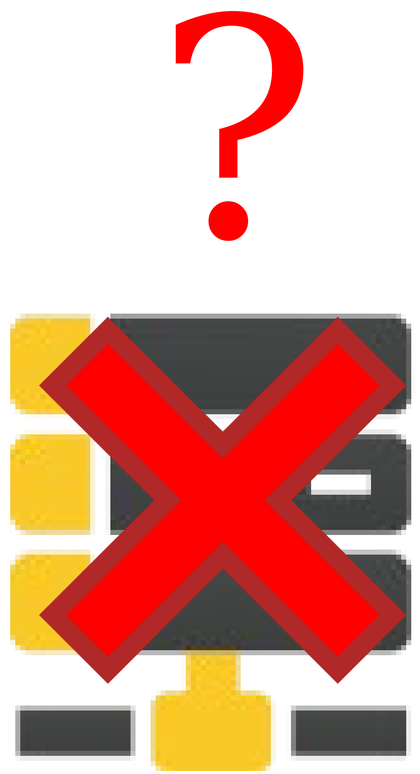
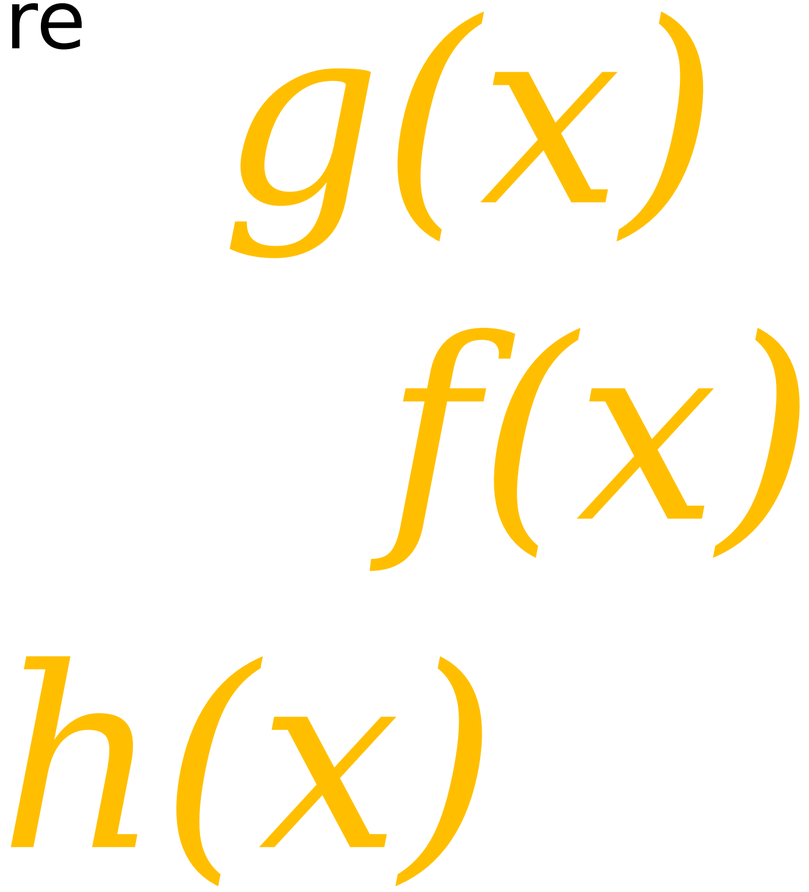
Cloud services – Serverless

- Fully managed cloud service
  - Servers
  - Ressource management
  - Ressource allocation
- You pay for consumed resources



Cloud services – FaaS

- Based on the “Servleress” architecture
- You just run your code
- No servers
- No deployment
- No application management



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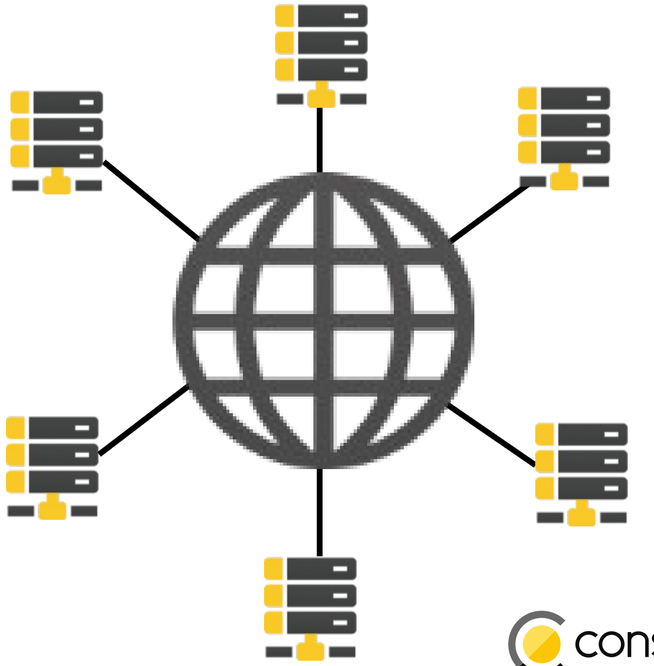
Cloud native

- Application development approach
- Leverage the cloud computing architecture
- Comes with:
  - Containers
  - CI/CD
  - Microservices
  - DevOps



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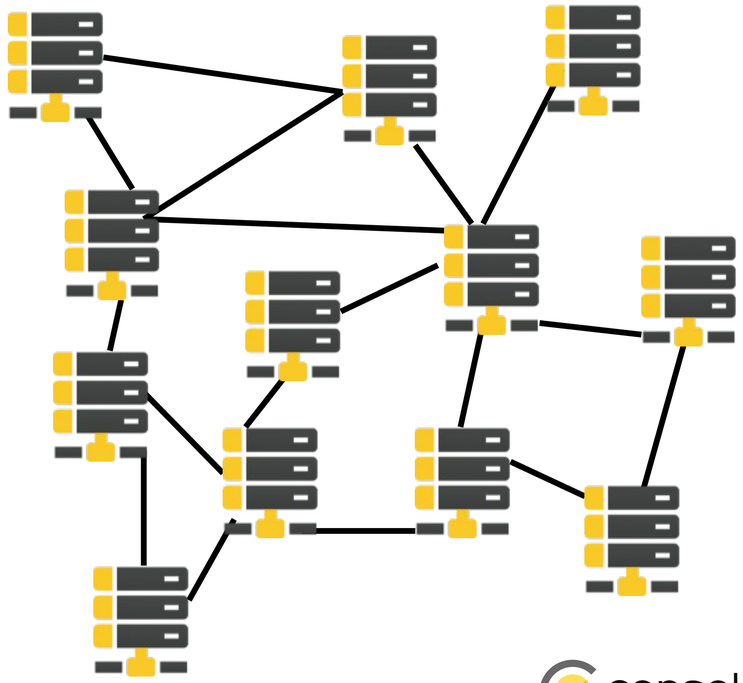
Microservices

- Architecture pattern
- Composing big applications from loosely coupled services
- Increses robustness of the system
- Linked via communication protocols



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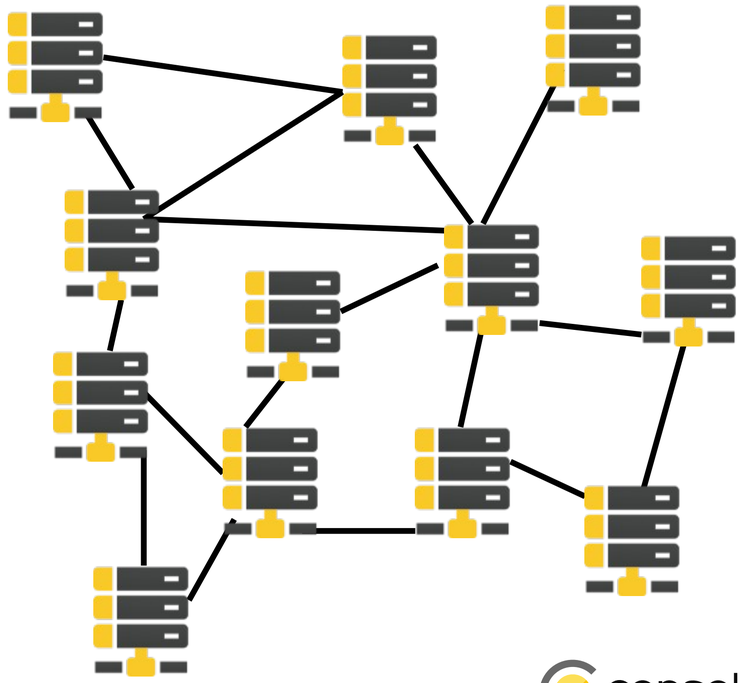
Microservices

- Developed by independent teams
- Technically independent
- Limited functionality/Bounded context
- Easy to replace
- Easy to scale



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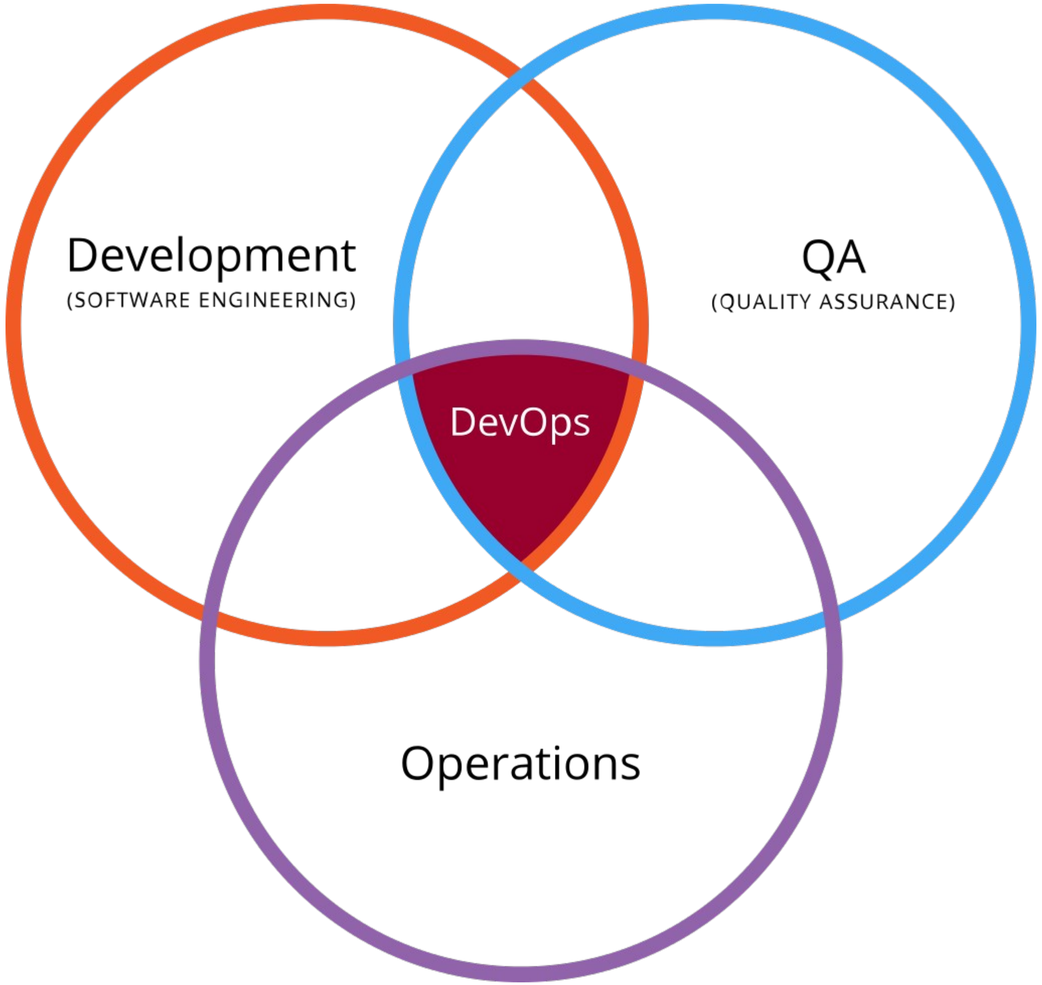
DevOps

- Clipped combound of
  - Development
  - Operations
- No unique definition



https://commons.wikimedia.org/wiki/File:Devops.svg#/media/File:Devops.svg

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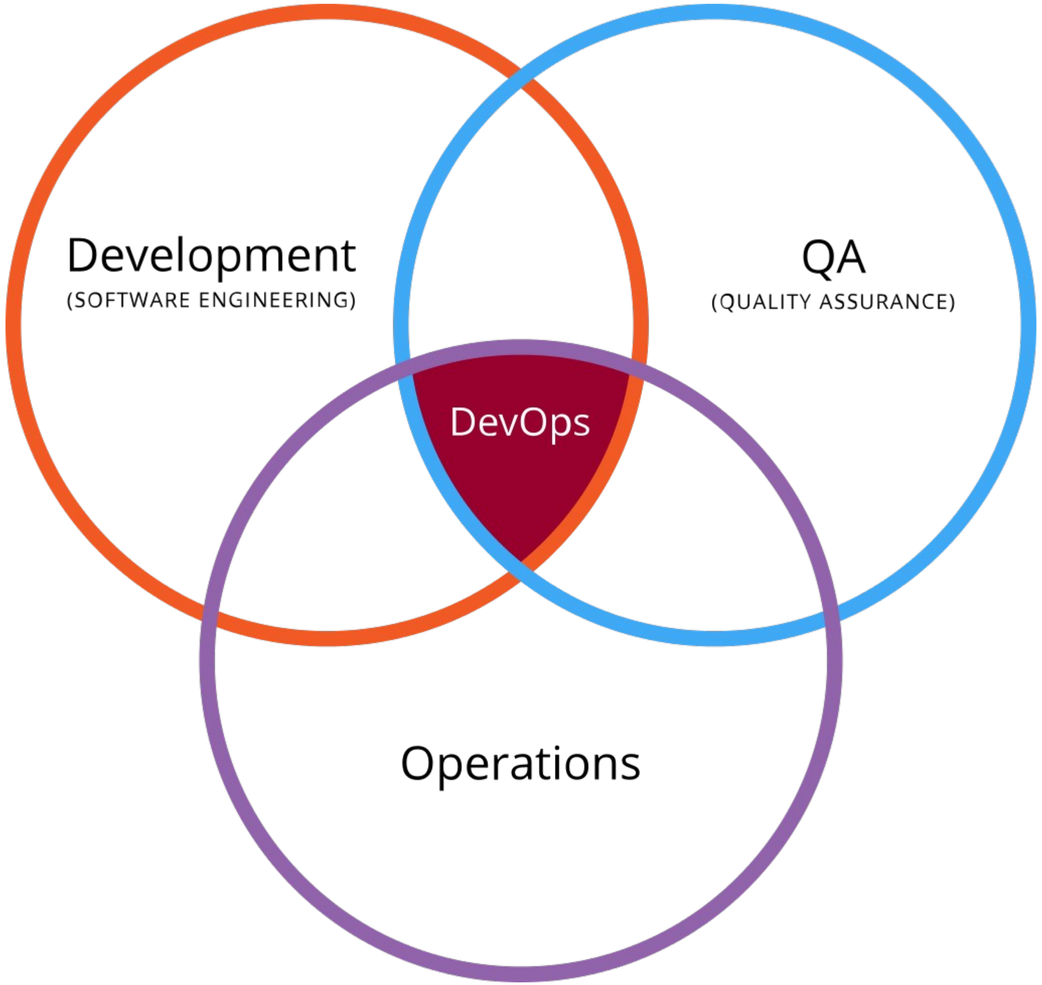
DevOps

- One common idea:
  - Shorten development life cycle
  - Let’s work together
  - Build cross fuctional Teams
- Ideal for microservices



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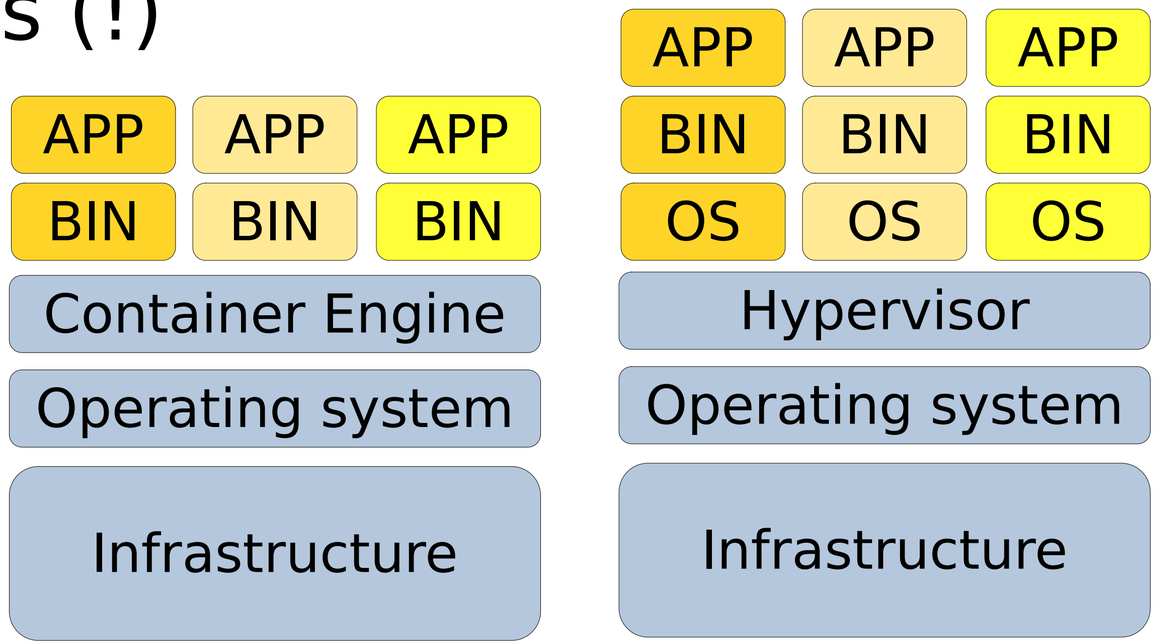
Container

- Virtualization on operating system level
- Separates user level from kernel level
- Allows multiple user level environments
- Different from virtual mashines (!)



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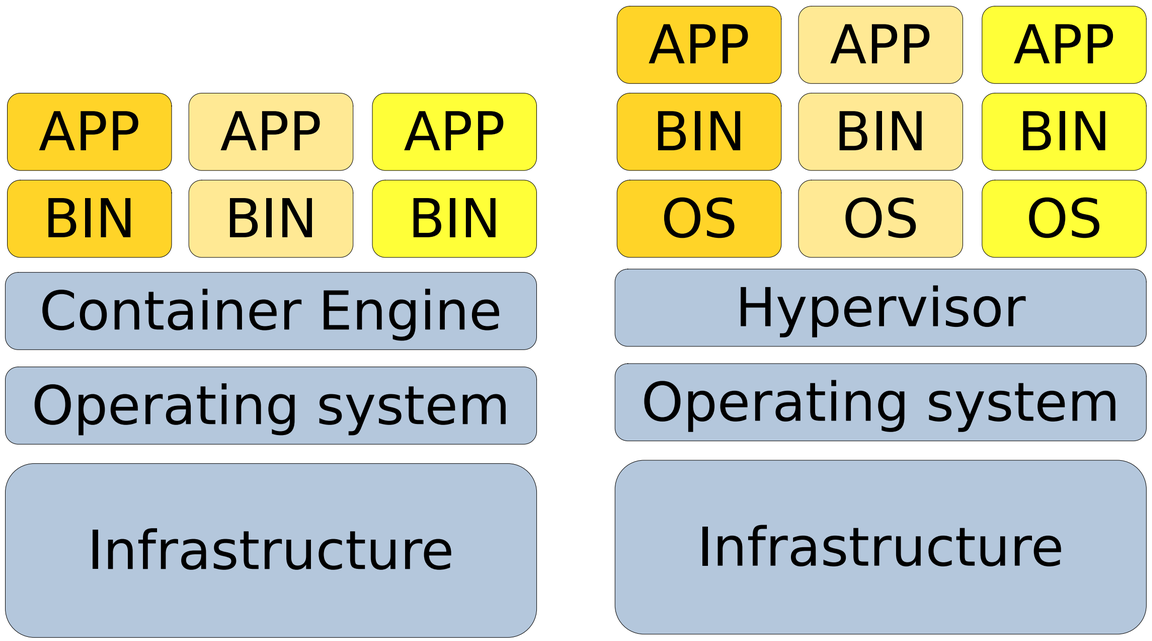
Container

- Famous implementation: Docker
- But there are others:
  - rkt
  - LXD
  - chroot



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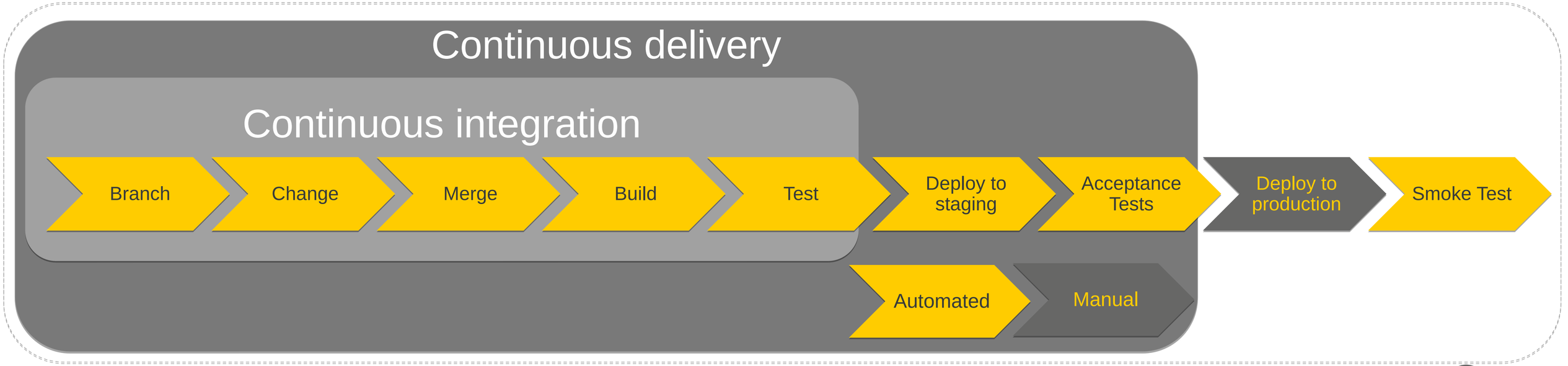
CI/CD

- Consists of:
  - Continuous integration
  - Continuous delivery



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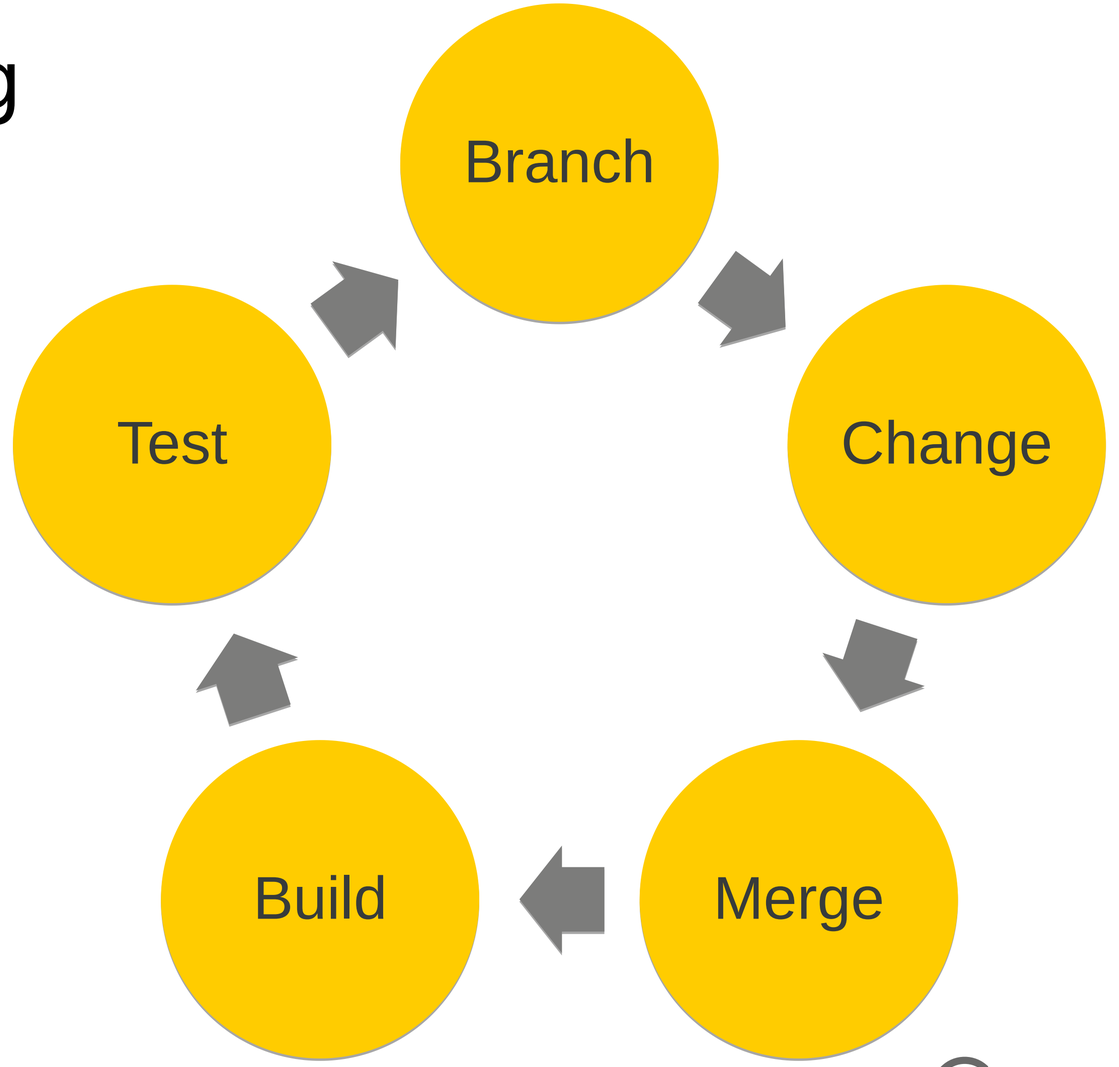
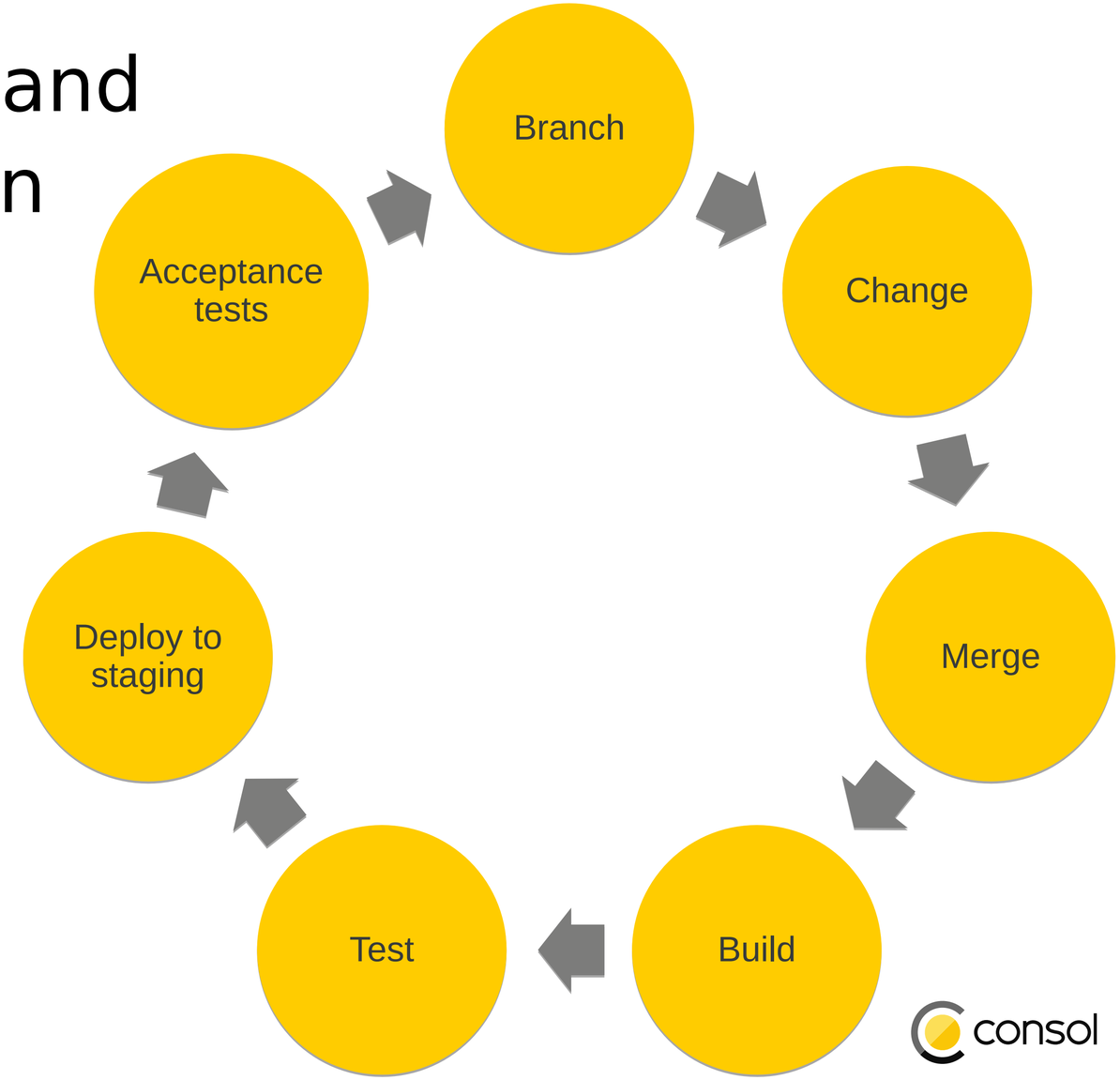
CI/CD – CI

- Born from extrem programming
- Merge code early and often
- Build your code automatically
- Test your code automatically
- Goals:
  - Early feedback
  - Reduce merge conflicts



CI/CD – CD

- Release your software on demand
- Extends Continuous integration
  - Deploying to a staging env
  - Perfoming acceptance tests



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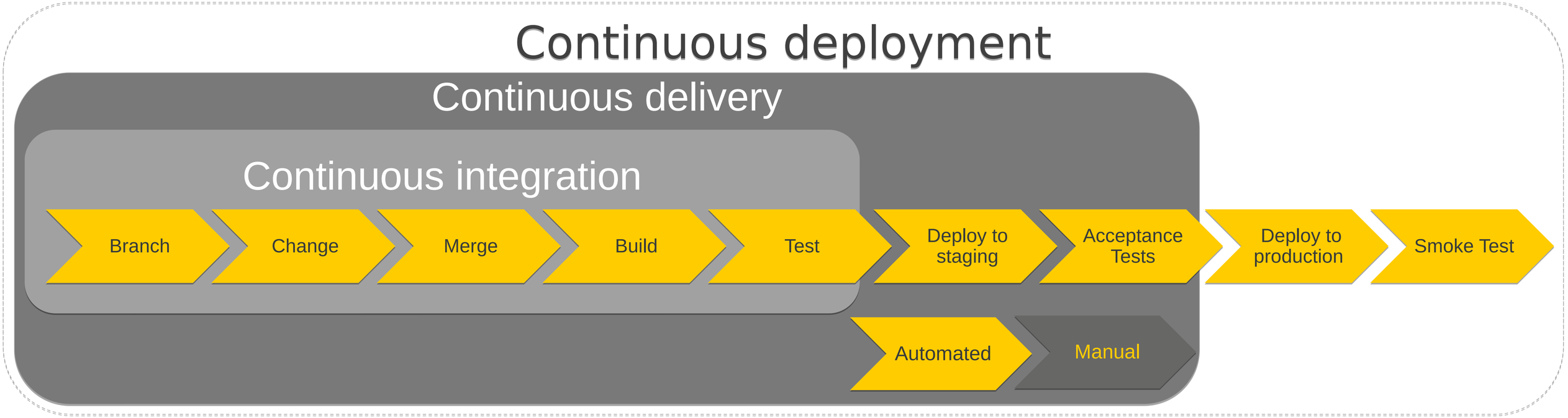
CI/CD – CD++

- Continuous ~~delivery~~ deployment



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Cloud provider

Google Cloud Platform

ORACLE®

CLOUD

RED HAT®
OPENSHIFT
Container Platform

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Costs

- Different models
- Depends on the use case
- Depends on the software
- If you do it right you can safe a lot of money

Google Cloud Platform

aws

Azure

RED HAT® OPENSHIFT Container Platform

ORACLE® CLOUD

IBM Cloud

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Cloud native computing foundation

- Founded 2015
- Kubernetes as base technology
- cncf.io
- Goals:
  - Bring sustainability to cloud computing
  - Create a rich and breathing ecosystem
  - Focus on open source and vendor neutrality
- Definitely worth looking at

https://www.cncf.io/ https://github.com/cncf/foundation/blob/master/charter.md

Cloud native computing foundation

https://www.cncf.io/

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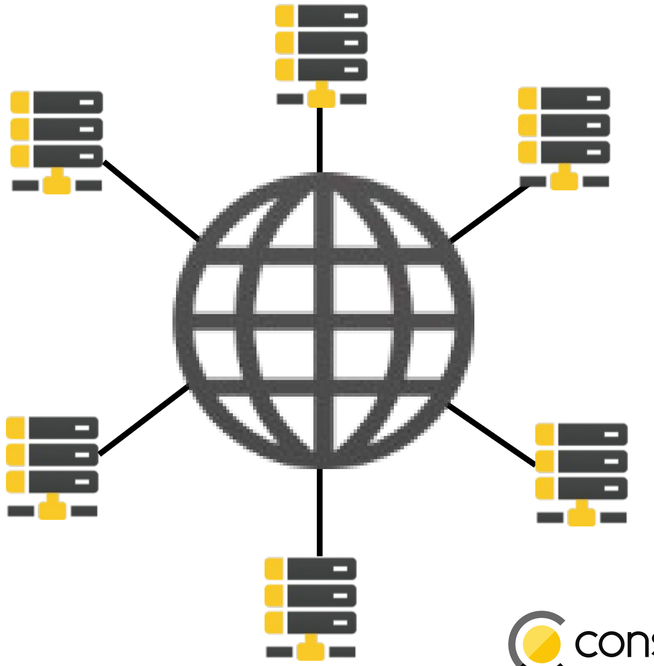
12 factor app

- 12factor.net
- Methodology for building SaaS apps
- IMHO: Recommendable in general
- Focus on:
  - Leveraging cloud plattforms
  - Maximum portability
  - Supporting CI/CD
  - Easy scaling



https://12factor.net/

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12 factor app

1) Codebase
2) Dependencies
3) Configuration
4) Backing services
5) Build, release run
6) Processes
7) Port binding
8) Concurrency
9) Disposability
10) Dev/Prod parity
11) Logs
12) Admin processes

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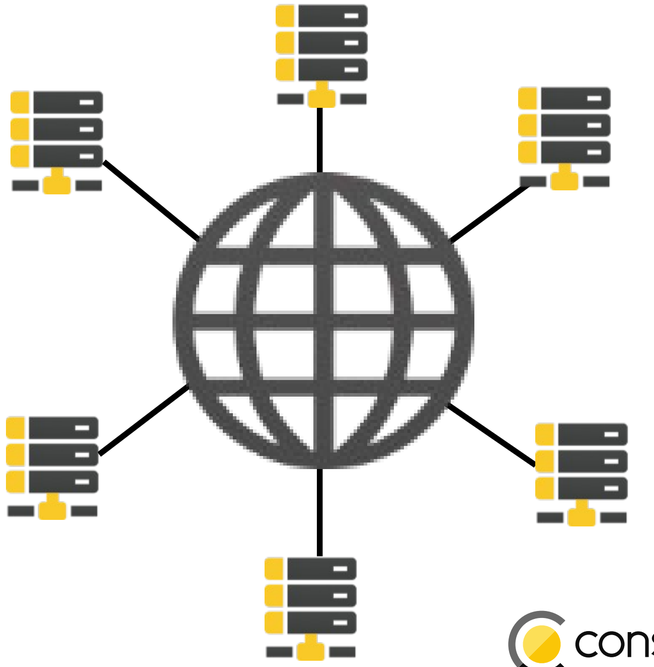
DDD - Domain driven design

- Eric Evans – Domain driven design
- Is a software development mindset
- Create and maintain large and complex software systems
- Domain experts + Software developers



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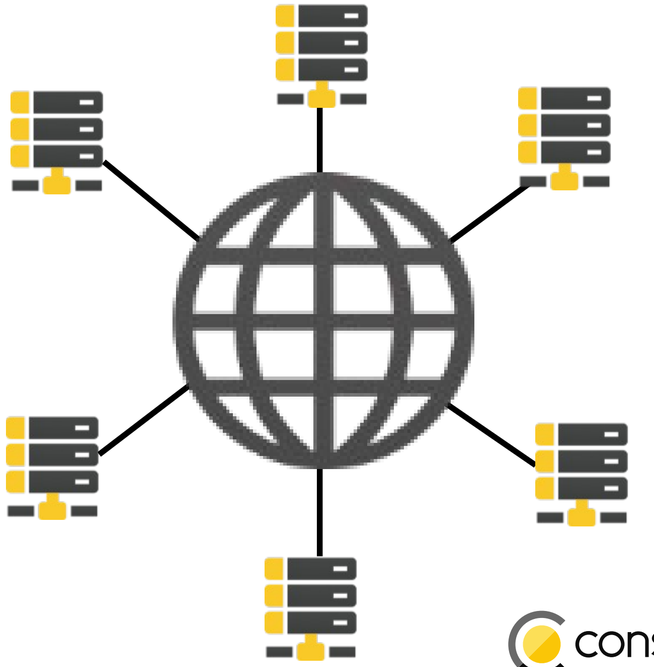
DDD - Domain driven design

- Assumption: Software is focused on domain logic
- Ideas:
  - Create a domain model
  - Create bounded contexts
  - Create a ubiquitous language
  - Link Contexts in a context map
  - Build software based on that knowledge



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Questions?

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Thank you!

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