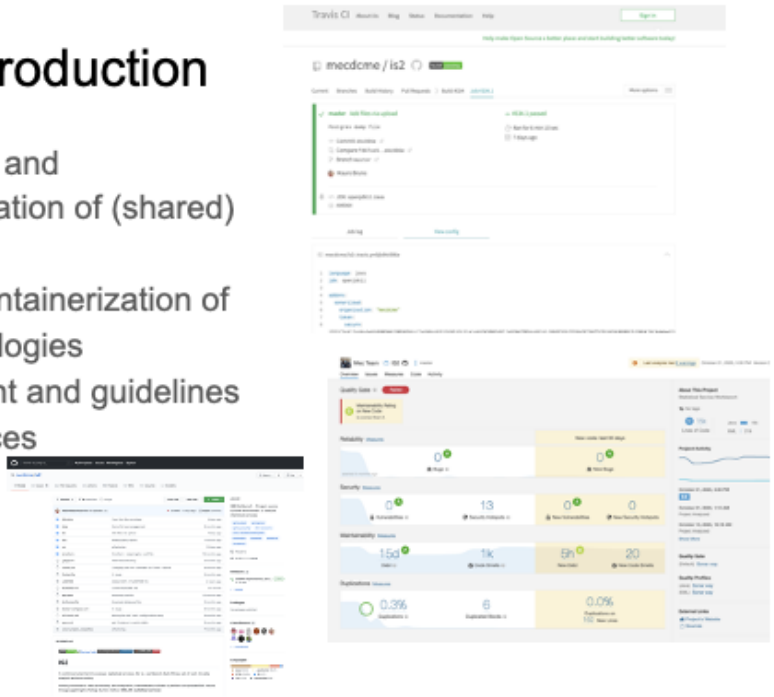
- I'll talk a little bit about service deployment and the use of cloud technology in the context of the I3S work, specifically Work Package 3
- And a little bit about some of the base technologies, and base techniques we explore within the project.
- There is a tight connection with Work Package 2 which works on the architecture side of things
- I'll dive into some technical concepts, but as everyone knows technology never solves everything.
- The way we organize how we work is also key to survive the digital transformation.

I3S - WP3 - Short introduction

- Objective: Explore methods and technologies for containerization of (shared) services
- Establishing sandbox for containerization of services using cloud technologies
- Publish architecture blueprint and guidelines for containerization of services

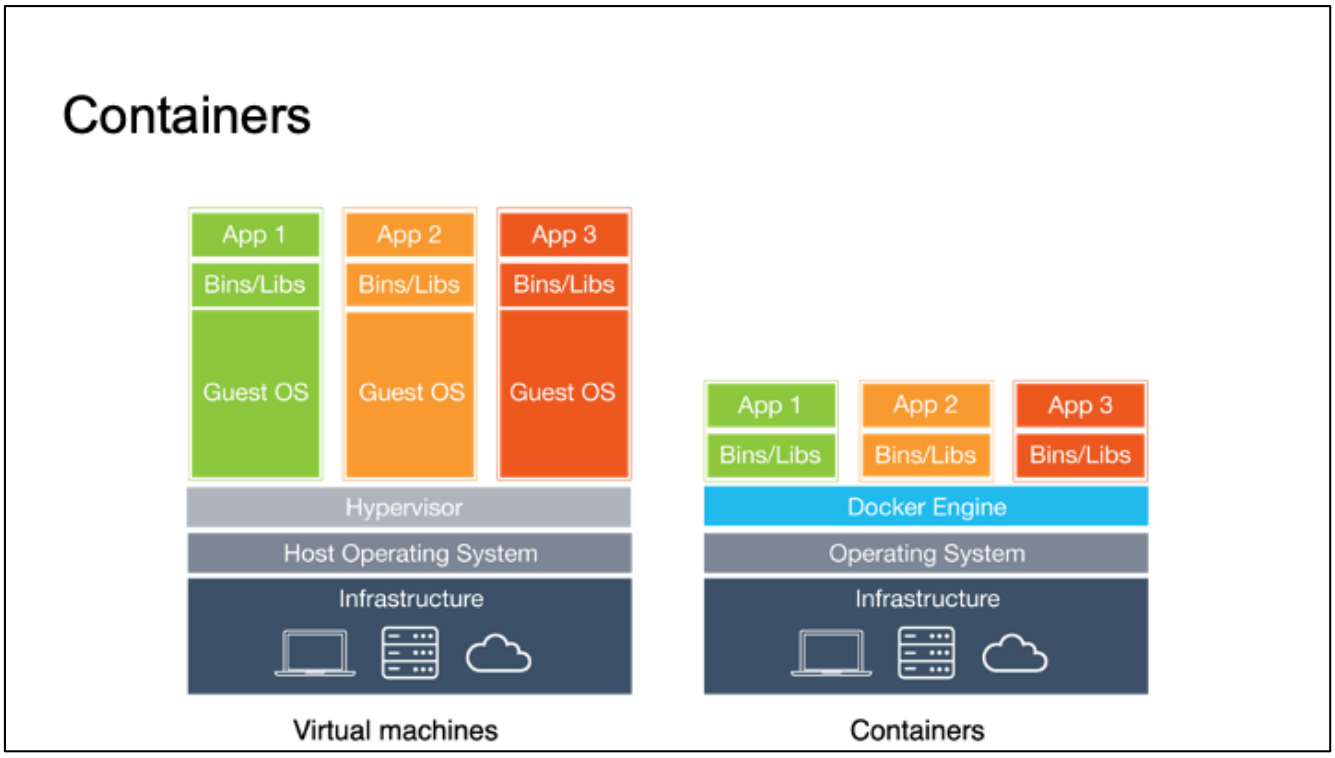


"CSPA in practice"

- Using and TESTING the concept developet within CSPA
- Getting the hands dirty and just do it.
- Building competency and awareness of cloud native practice which we want to share with the community

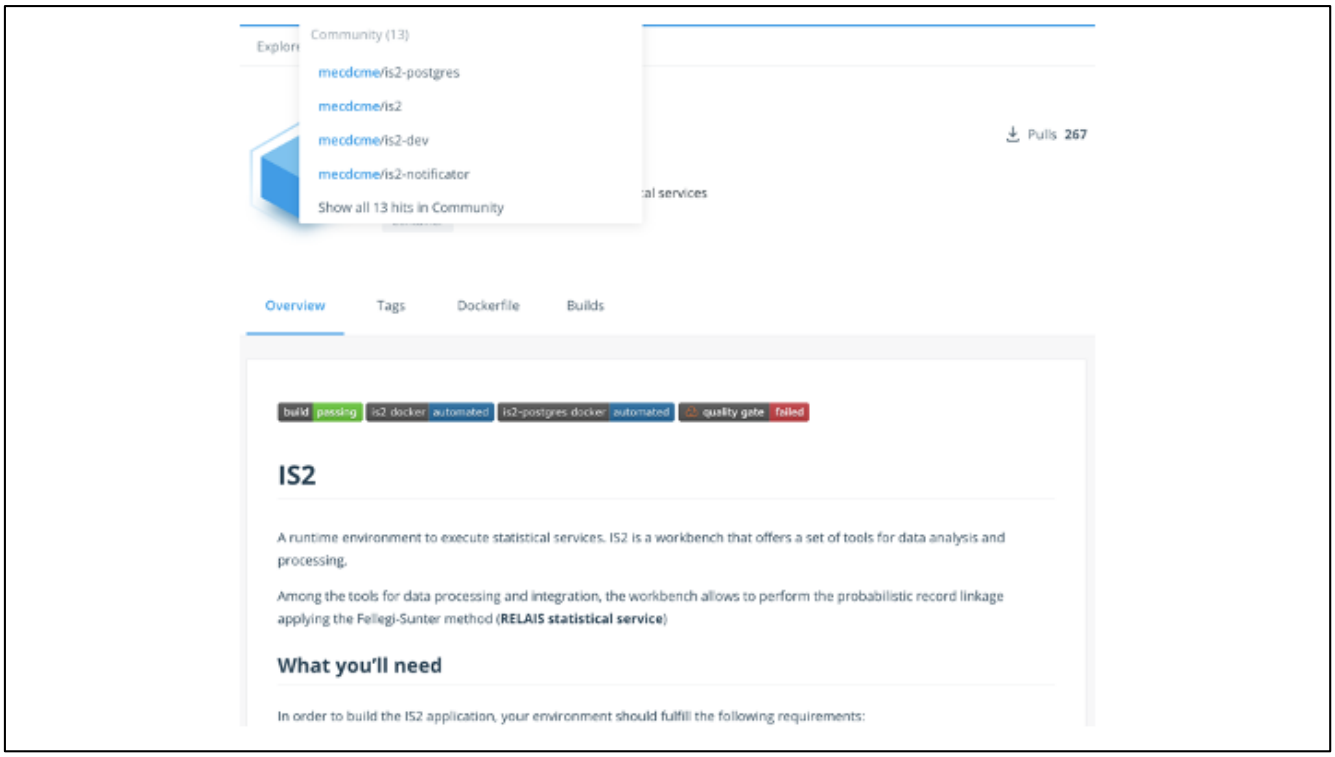
Trial "services" - some of them are really applications

- PXWeb
- Relais
- Arc



- Evolution from physical to virtualization.
- Small machines that only runs what's needed.
- Scaleability (if done right) (state, ephemeral), Ability to automate (if done right), Pet vs. Cattle
- Identical environment, that are easily reproduced using CODE.
- Can be used for packaging, and distributing complete set of services and applications
- Docker Hub provides ready made docker images, and templates, and it support uploading your service/app as an image which

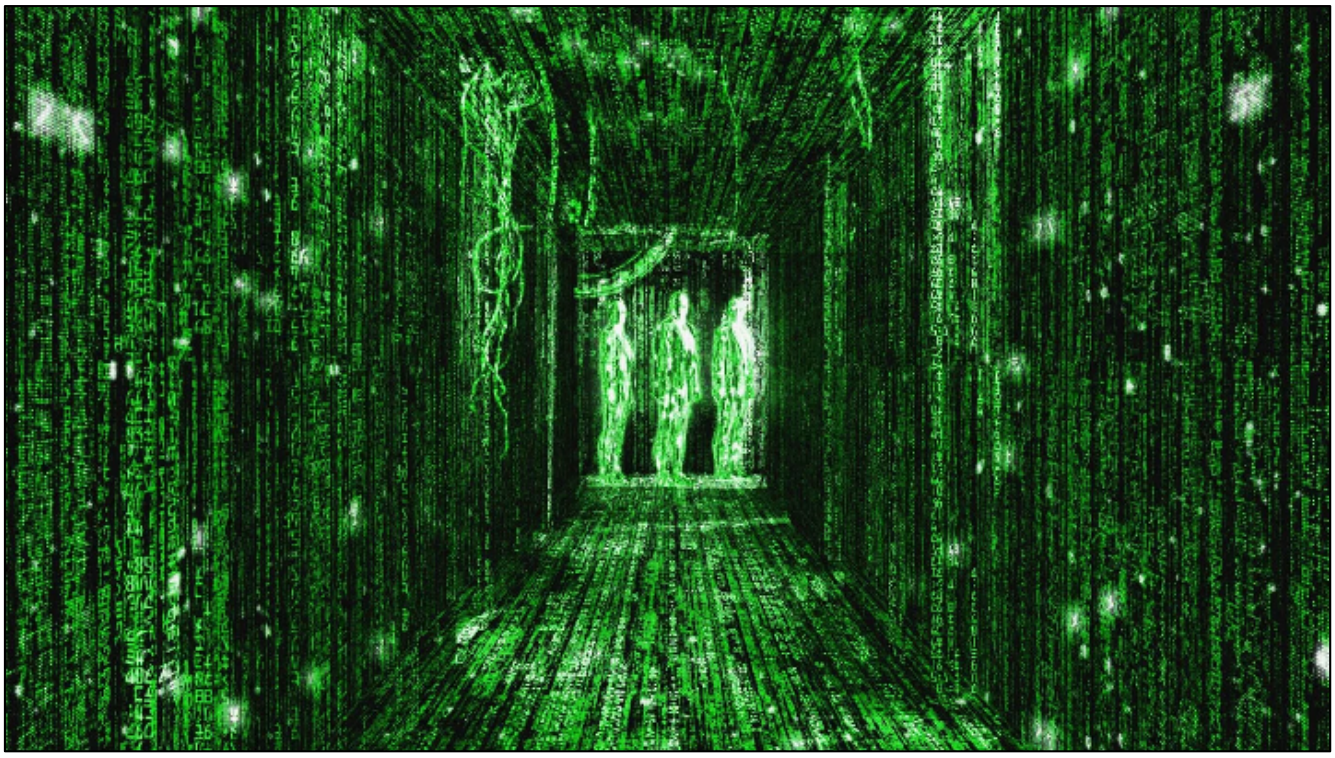
can be downloaded an run.


Explore
Community (13)
mecdcme/is2-postgres
mecdcme/is2
mecdcme/is2-dev
mecdcme/is2-notificator
Show all 13 hits in Community
Pulls 267
al services
Overview
Tags
Dockerfile
Builds
build passing
is2 docker automated
is2-postgres docker automated
quality gate failed
IS2
A runtime environment to execute statistical services. IS2 is a workbench that offers a set of tools for data analysis and processing.
Among the tools for data processing and integration, the workbench allows to perform the probabilistic record linkage applying the Fellegi-Sunter method (RELAIS statistical service)
What you'll need
In order to build the IS2 application, your environment should fulfill the following requirements:

BUT! Containers are not enough

- It creates another layer - can (if not automated, and unmanaged) create more complexity
- You need more than containers to be able to take full advantage of containers
- You also need a flexible infrastructure (using cloud or cloud native technologies).
    a. How do you handle scale?
    b. Orchestration of services?
    c. How do you handle security?
        i. Concepts like Zero Trust
        ii. Policies

- Microservices is not necessarily the goal -> Flexibility is. You can achieve this as modular monoliths as well. We can have another presentation where this is the theme.

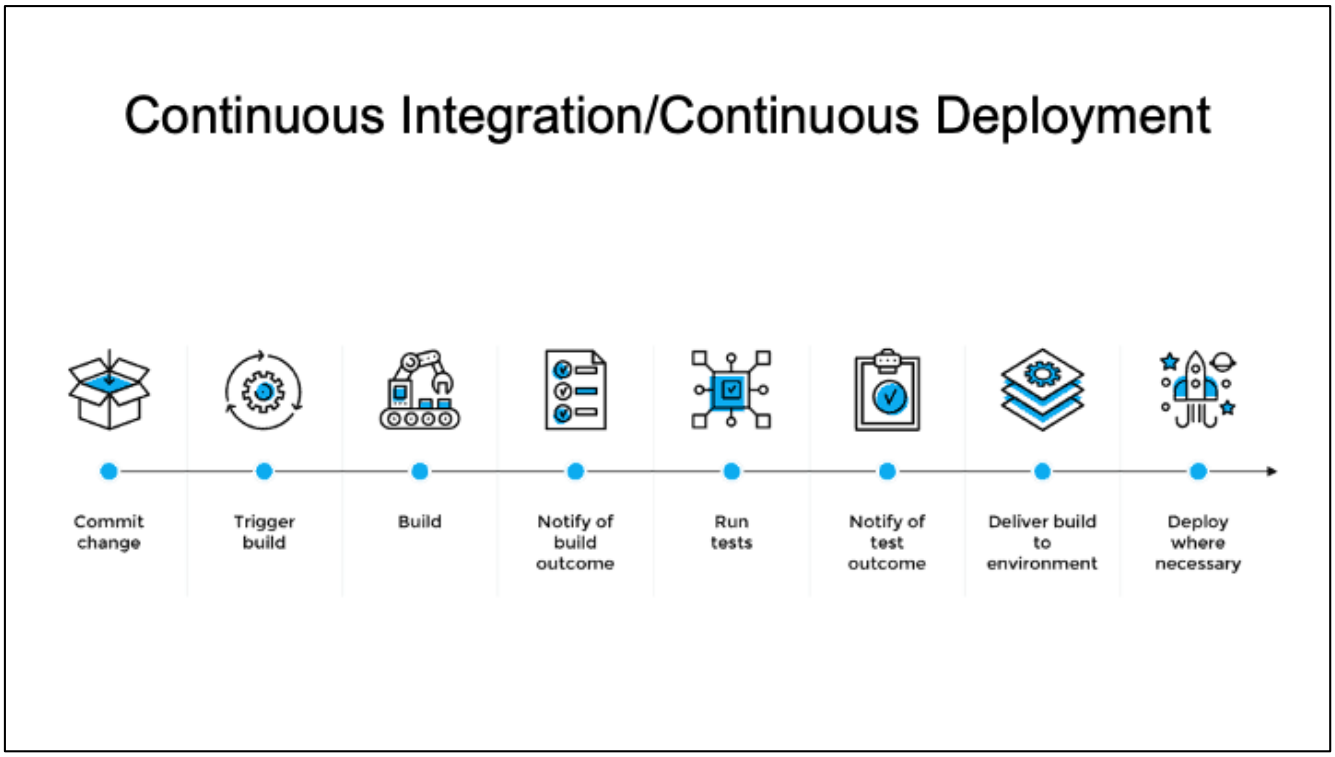


Infrastructure as code

- Provision networks, storage and databases, orchestration clusters
- And it gives you repeatable deployments!
- Versioned infrastructure (because your infrastructure is code).
- Use-case specific deployments -> Just need something for developing a new service, or
- Infrastructure management at scale -> need more memory? More nodes in the

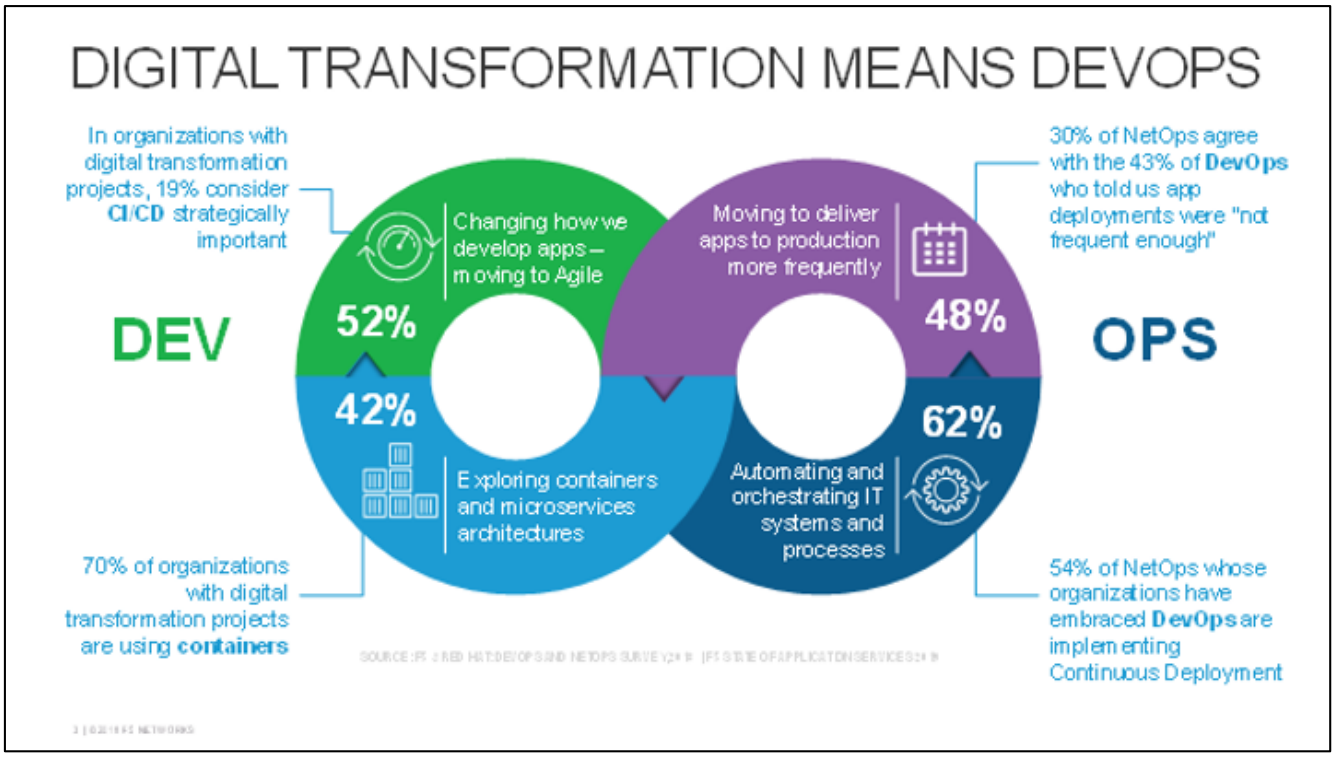
cluster, another database. Just check in the code.

- Application automation -> Tons of open source tool chains

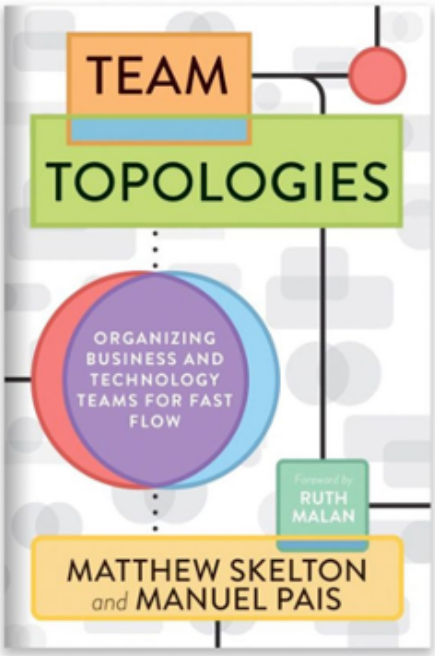


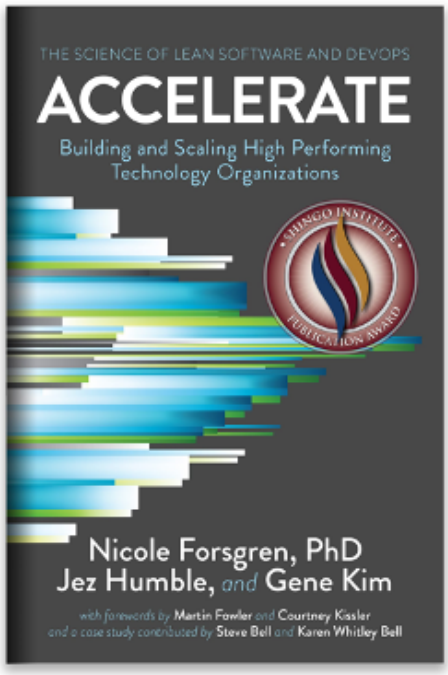
CI/CD

- Repeatability, and Automation
- Automated build and deployments
- Automated testing
- Can be used without being in cloud
- Short distance between your commit and having the code in production



- DevOps
- Small releases OFTEN
- Since infrastructure is code
- Combination of ops and dev
- Automation, virtualization, and smart tool choices. Boring, repetitive work is automated
- Less handover
- Fail fast
- Organizational change?

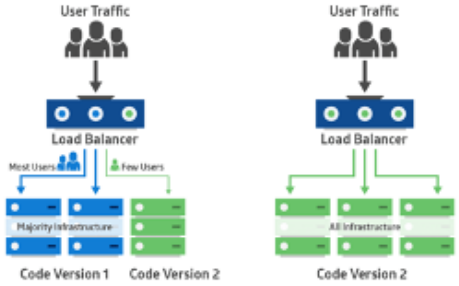




- Many of you probably know about this.
- These talks about organization (of teams). Accellerate talks about the result of a scientific analysis of the impact of devops practises in organizations.
- On a management level, this is recommended reading; Regardless of how bureaucratic your organization is, there are ways of improving organizational performance.
- **Digital transform requires more than technology**

Quick intro to concepts that works better in a cloud native environment

- Canary Deployment
- Secrets handling



- As promised in the abstract, although we're running out of time I'm going to introduce a couple of concepts thats not impossible on a traditional plattform, but infinetly easier with cloud native tool chains because of low cost of creating paralell infrastructure, and advanced nework routing.
- Canary Deployment is a pattern for rolling out functionality to just SOME users not all
  - Beta testing
  - Usability testing
  - Load tests
  - https://medium.com/containers-101/fully-automated-canary-deployments-in-kubernetes-70a671105273
- Secrets handling
  - The ability to handle passwords, keys and other secrets without revealing them as plain text in your code
  - Does not require cloud, but is easier with cloud native toolchains
  - Always encrypt your secrets in transit and at rest

- Never commit secrets into your code repositories@Instead, inject secrets via an environment variable into your app
- 12 factor application. ->* https://12factor.net/config

- Thank you
- Questions