



Des silos au Platform Engineering en passant par le DevOps

Adopter GitOps et aller au-delà de l'hype 



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Who are we?



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DevRel
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Horacio Gonzalez

DevRel
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`@LostInBrittany`



IT in the 90s

Once upon a time...



In a time almost forgotten



When even internet was young...

When Windows 95 was the cutting edge



And a 100 Mb disk was huge...

Big companies still used mainframes



Bigger, fancier, but still the same old IBM

Bare-metal based IT reigned



Control, reliability, security...

But cost, rigidity, logistics...

Applying the industrial model



Trying to shoehorn IT into a model where it doesn't fit

Walls & Silos



Project
Owners

Developers

Sys Admin

Ops

And procedures, and hierarchy, and corporate politics


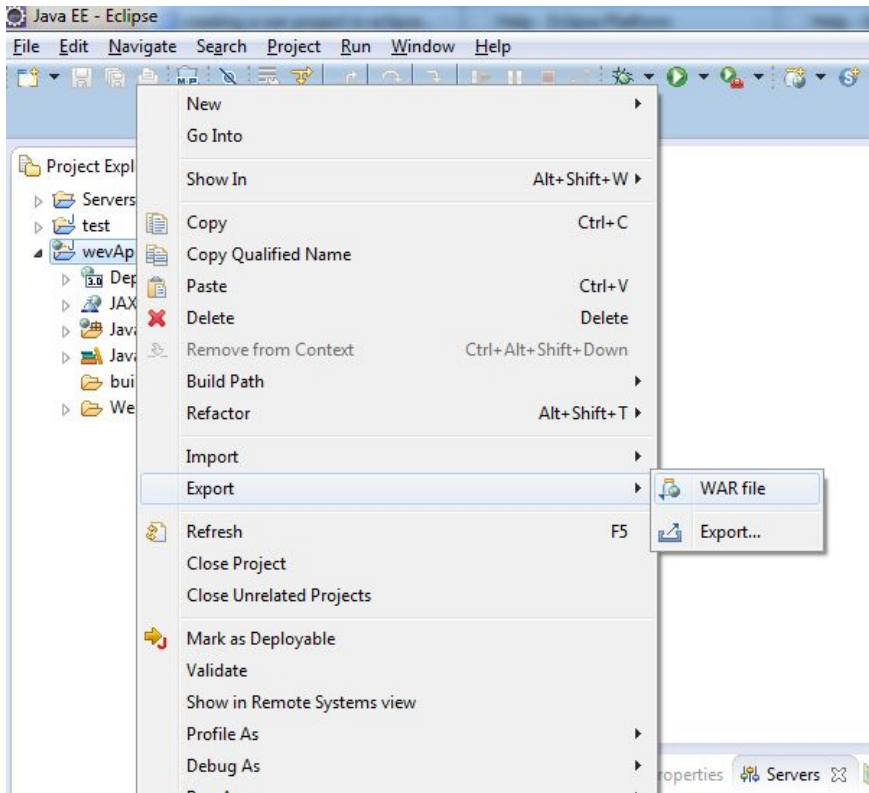


Tooling evolves

CVS, Ant and (Leeroy) Jenkins



Old school procedures



Apache Commons[™]
<http://commons.apache.org/>

Apache Commons IO [™] Last Published: 09 June 2023 | Version: 2.13.0 ApacheCon Apache Commons

Download Apache Commons IO

Using a Mirror

We recommend you use a mirror to download our release builds, but you **must verify the integrity** of the downloaded files using signatures downloaded from our main distribution directories. Recent releases (48 hours) may not yet be available from all the mirrors.

You are currently using <https://dtdn.apache.org/>. If you encounter a problem with this mirror, please select another mirror. If all mirrors are failing, there are backup mirrors (at the end of the mirrors list) that should be available.

Other mirrors:

It is essential that you **verify the integrity** of downloaded files, preferably using the **PGP** signature (`*.asc` files), falling that using the **SHA512** hash (`*.sha512` checksum files). The **KEYS** file contains the public PGP keys used by Apache Commons developers to sign releases.

Apache Commons IO 2.13.0 (requires Java 8)

Binaries

commons-io-2.13.0-bin.tar.gz	sha512	pgp
commons-io-2.13.0-bin.zip	sha512	pgp

Tooling empowering changes



Theory existed since 1999
But without the right tooling...

Source control tools



ClearCase



Better than copying and renaming folders...

Dependency management & build



The agile dependency manager

Better than grabbing each dependency in their website
and running `javac` by hand...

Unit testing and continuous integration



Hudson CI



Jenkins

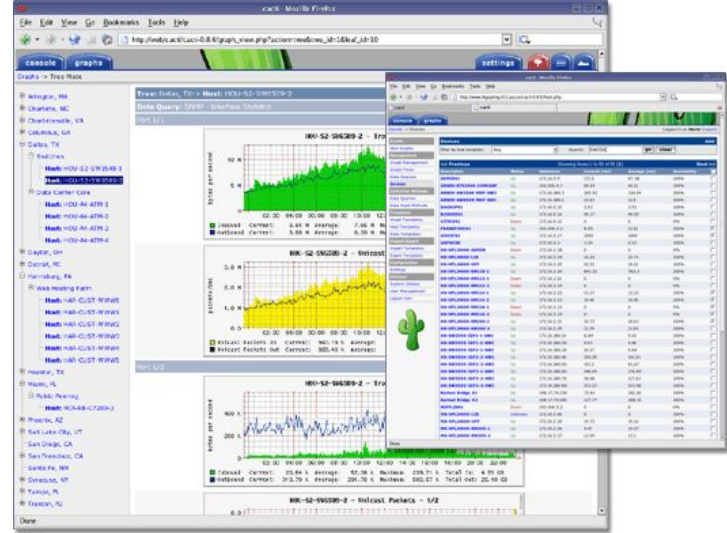
If *Testing is Doubting*, let's doubt automatically

Monitoring tools



Nagios

ZABBIX



No more spending nights looking at a status screen

Too many changes in a few years



Old ways were difficult to change



Rémi Verchère ❄️

@rverchere

bash will still be used

7:46 PM · Aug 8, 2023 · **290** Views



XP, agility and DevOps

Buzzwords that changed the IT 

Extreme Programming



The Values of Extreme Programming

Extreme Programming (XP) is based on values. The rules we just examined are the natural extension and consequence of maximizing our values. XP isn't really a set of rules but rather a way to work in harmony with your personal and corporate values. Start with XP's values listed here then add your own by reflecting them in the changes you make to the rules.

Simplicity: We will do what is needed and asked for, but no more. This will maximize the value created for the investment made to date. We will take small simple steps to our goal and mitigate failures as they happen. We will create something we are proud of and maintain it long term for reasonable costs.

Communication: Everyone is part of the team and we communicate face to face daily. We will work together on everything from requirements to code. We will create the best solution to our problem that we can together.

Feedback: We will take every iteration commitment seriously by delivering working software. We demonstrate our software early and often then listen carefully and make any changes needed. We will talk about the project and adapt our process to it, not the other way around.

Respect: Everyone gives and feels the respect they deserve as a valued team member. Everyone contributes value even if it's simply enthusiasm. Developers respect the expertise of the customers and vice versa. Management respects our right to accept responsibility and receive authority over our own work.

Courage: We will tell the truth about progress and estimates. We don't document excuses for failure because we plan to succeed. We don't fear anything because no one ever works alone. We will adapt to changes when ever they happen.

What lessons have we learned about implementing XP so far. 🗨️



[ExtremeProgramming.org home](#) | [XP Rules](#) | [XP Map](#) | [Lessons Learned](#) | [About the Author](#)

Manifesto for Agile Software Development

Manifesto for Agile Software Development

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

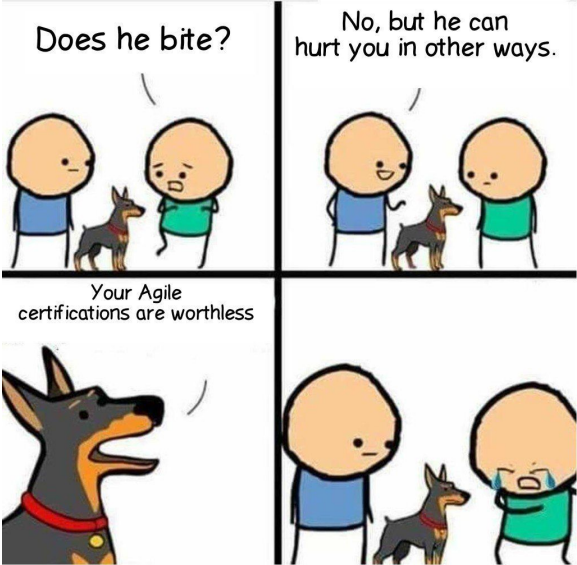
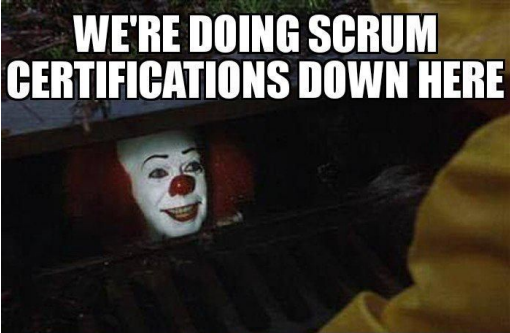
That is, while there is value in the items on the right, we value the items on the left more.



Breaching walks, breaking down silos

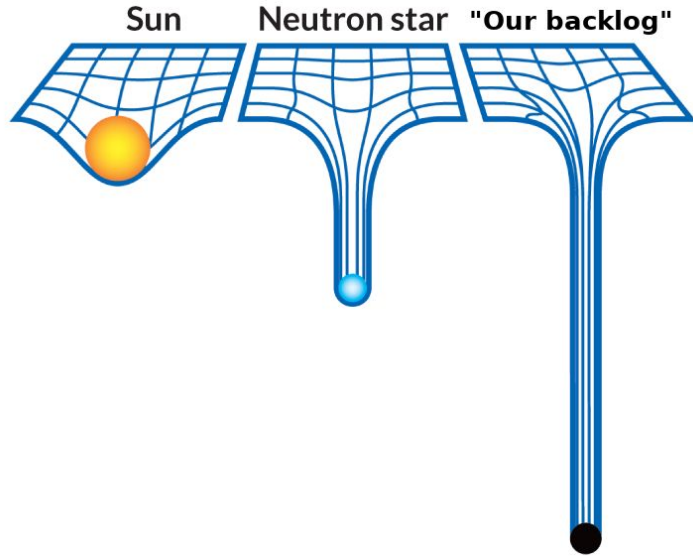


The business of Agility

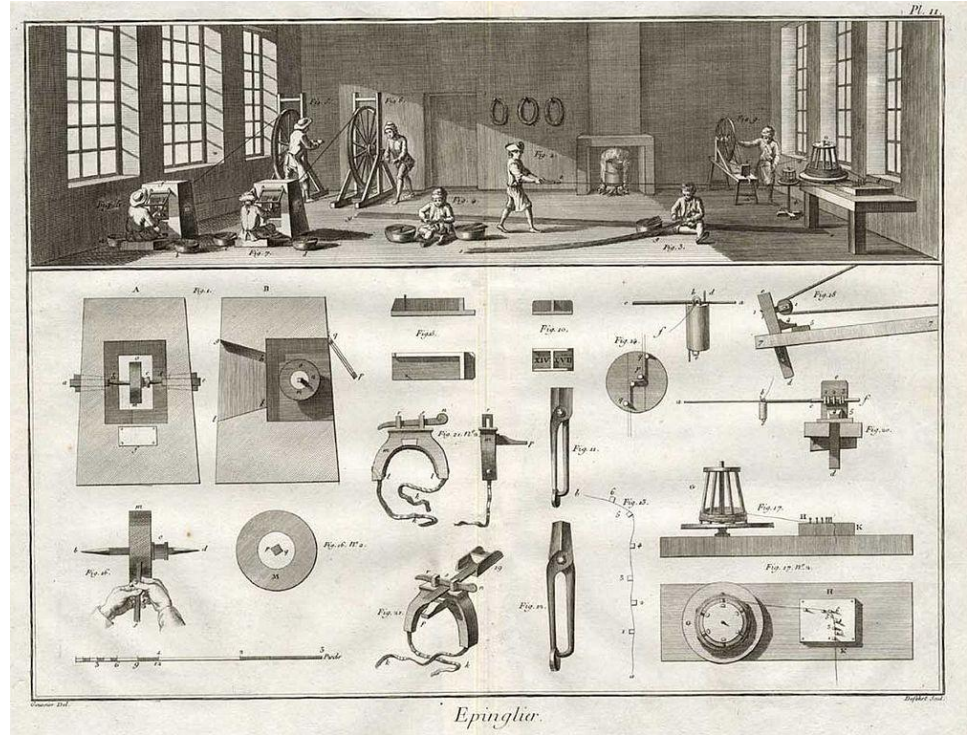


The Dark Side rises

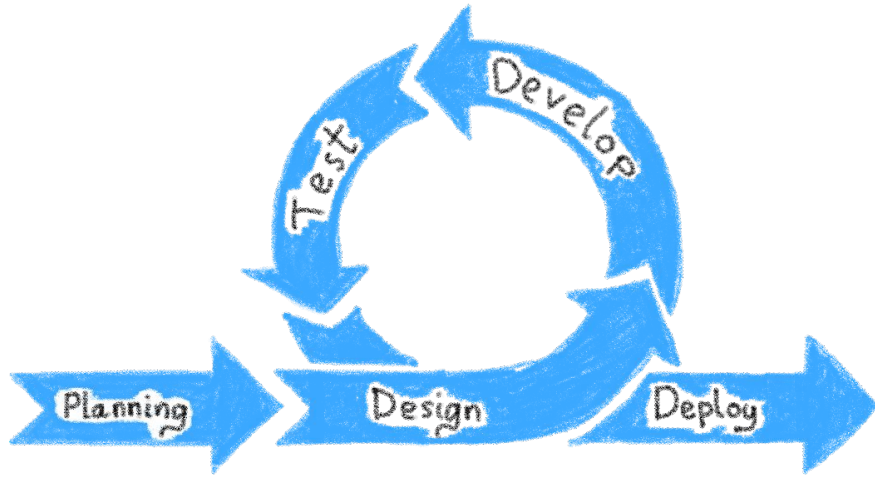
Agile Tooling



Back to industrial practices ?

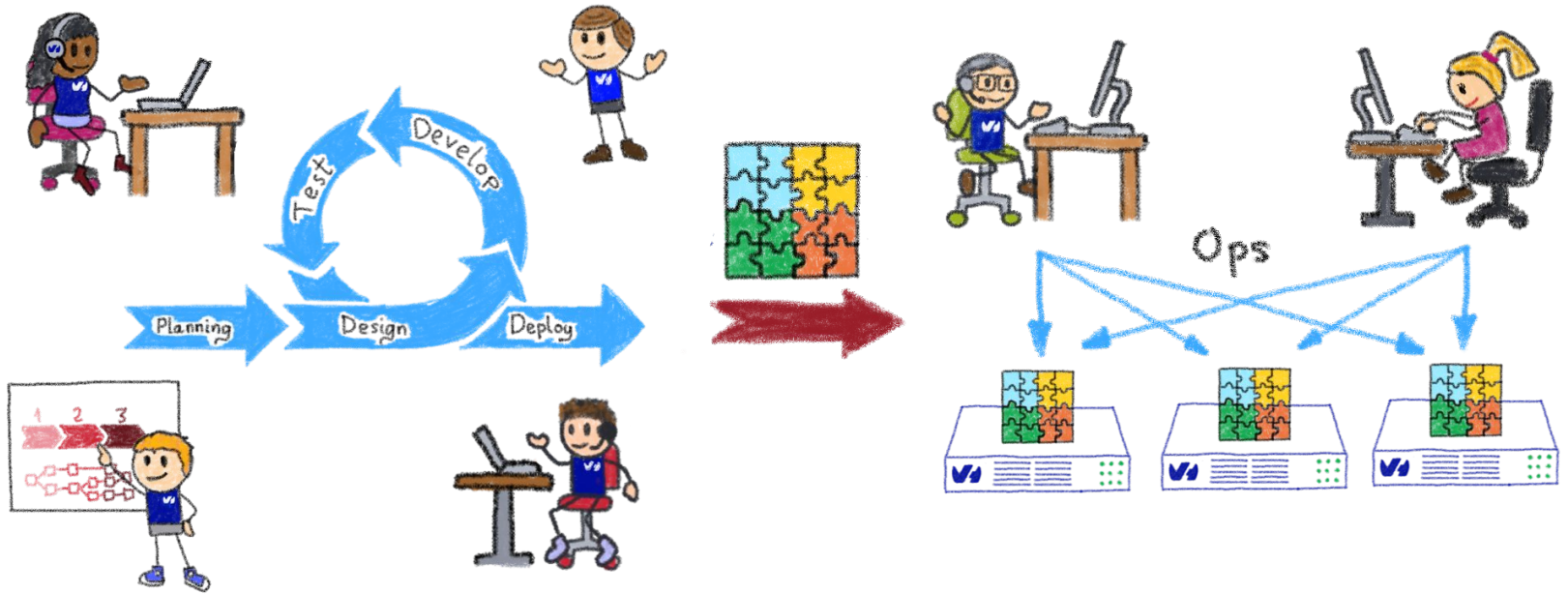


Is DevOps the same than Agility?



Can you have one without the other?

You could have Agility without DevOps



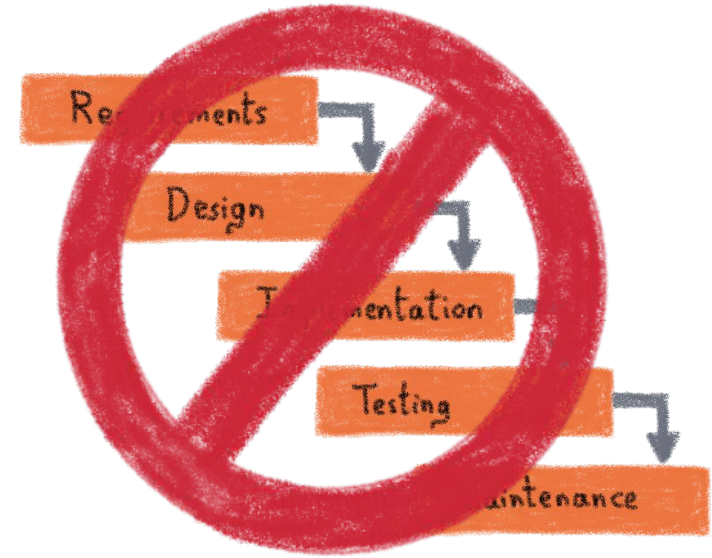
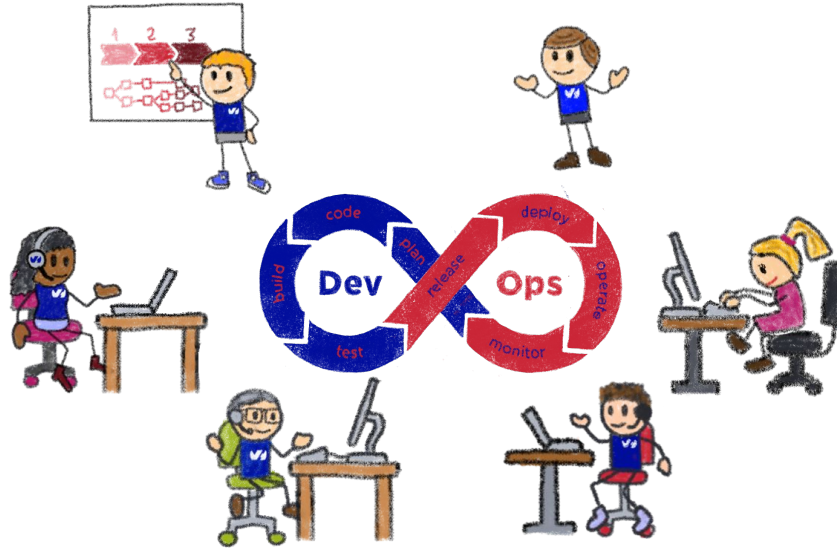
Even if I fail to see why you would want...

DevOps is a reaction to the wall of confusion



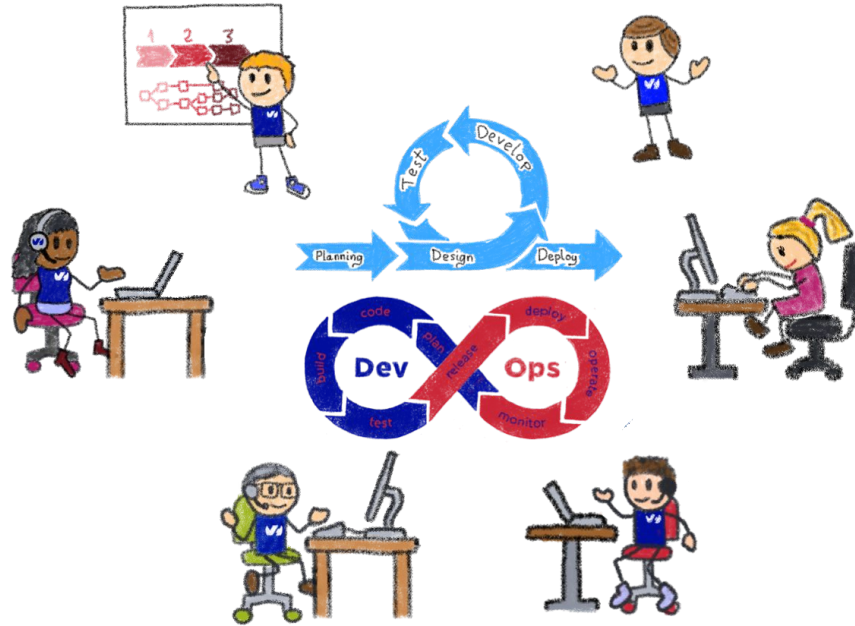
Making the different stakeholders
to work together in sync

You cannot have DevOps without agility



DevOps is about shorter development sprints, increased focus on testing, increasing automation

DevOps comes with Agility



DevOps is an extension of Agile that includes systems and operations



Enter the Cloud

Renting server time
in other's people infra

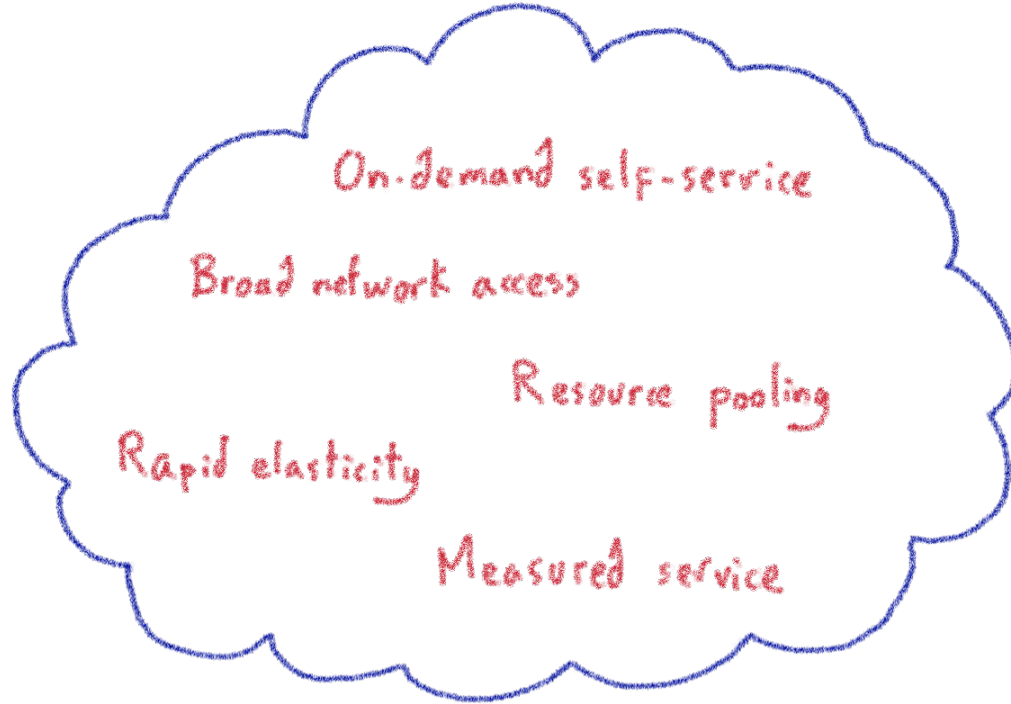


From virtualisation to the cloud

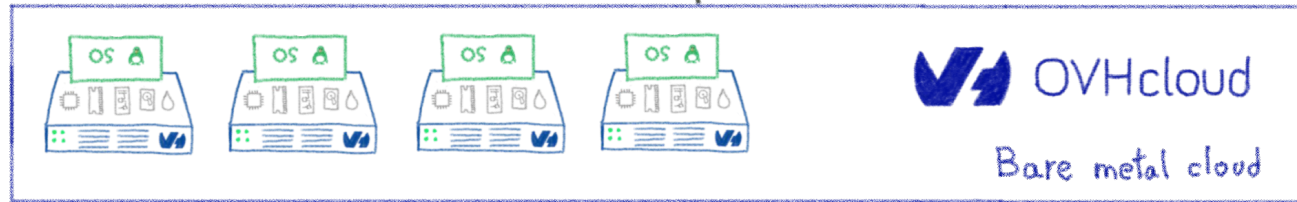
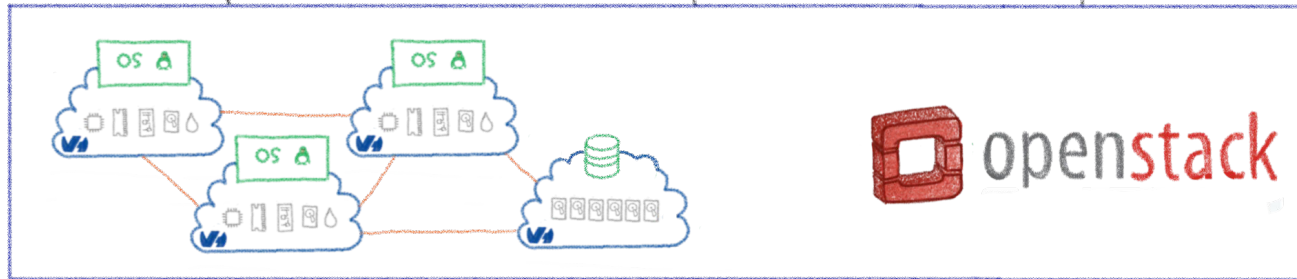


How to use the infrastructure at its full capacity

The five pillars of the Cloud



Cloud demands automation



It changes the way how IT works

Bon de commande

Logo

Mon Entreprise
22, Avenue Voltaire
13002 Marseille, France
Téléphone : +33 4 92 99 99 99

Date : 4.8.2020
Bon de commande N° : 123
Numéro de client : 456
Modalité de paiement : 30 jours
Mode de paiement : CB / Chèque
Emis par : Pierre Fournisseur
Contact client : Michael Acheteur
Téléphone du client : 04 82 95 35 56

Destinataire
Acheteur SA
Michael Acheteur
31, rue de la Forêt
13100 Aix-en-Provence
France

Informations additionnelles
Merci d'avoir choisi Mon Entreprise pour nos services.
Service après-vente - Garantie : 1 an.

Ref. produit	Description	Quantité	Unité	Prix unitaire HT	% TVA	Total TVA	Total TTC
123456789	Main-d'œuvre	5	h	60,00 €	20 %	60,00 €	360,00 €
987654321	Produit	10	pcs	105,00 €	20 %	105,00 €	1 260,00 €
				Total HT		1 560,00 €	
				Total TVA		270,00 €	
				Frais de livraison		39,99 €	
				Total TTC		1 669,99 €	

Signature :

Siège social
22, Avenue Voltaire
13002 Marseille,
France
N° SIREN ou SIRET : xxxxx00001 N° TICJ
N° TVA intr. : FR04 999999999

Coordonnées
Pierre Fournisseur
Phone : +33 93 12345678
E-mail : Pierre@mscompagnie.fr
www.mscompagnie.fr

Détails bancaires
Banque : NP Paribas
Compte bancaire : 10050003
N° de compte : 12345678
IBAN : FR234124080234
SWIFT/BIC : FBNW33XXX

Dashboard Bare Metal Cloud Hosted Private Cloud Public Cloud Web Cloud Telecom Sunrise Marketplace English Horacio Gonzalez

Instances

Horacio's default / Kubernetes / Create a Kubernetes cluster

Create a Kubernetes cluster

1 Select a location

- All locations
- North America
- Central Europe
- Western Europe
- South-East Asia
- Oceania

- Beauharnois (BH55)
- Frankfurt (DE1)
- Gravelines
- Strasbourg (SBG5)
- Singapore (SGP1)
- Sydney (SYD1)
- London (UK1)
- Warsaw (WAW1)

Storage
Block Storage
Object Storage
Cloud Archive
Cold Archive **New**
Databases **New**
Volume Snapshot
Volume Backup **New**
Instance Backup

Network
Private Network
Public IPs
Gateway

Containers & Orchestration
Load Balancer
Managed Kubernetes Service
Managed Private Registry
Workflow Management

AI & Machine Learning

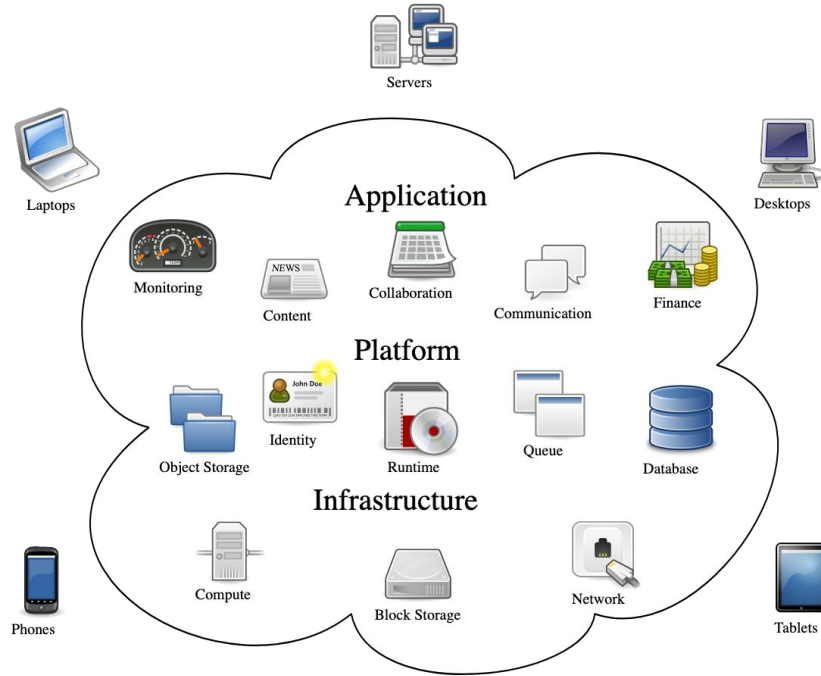
And it demands a mentality change

Empowering developers



Infrastructure is only a click away

Distributed is the new black



Cloud Native architectures and services

Sysadmins who code



Creating tools: automation, monitoring, observability...

New roles appear: SRE



WTF is a System Reliability Engineer?



Rémi Verchère ❄️

@rverchere

bash will still be used

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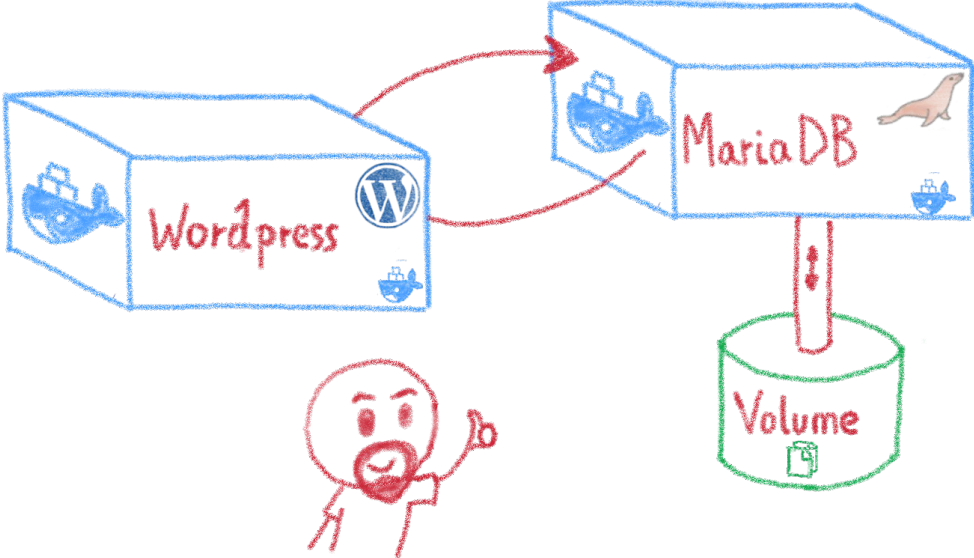
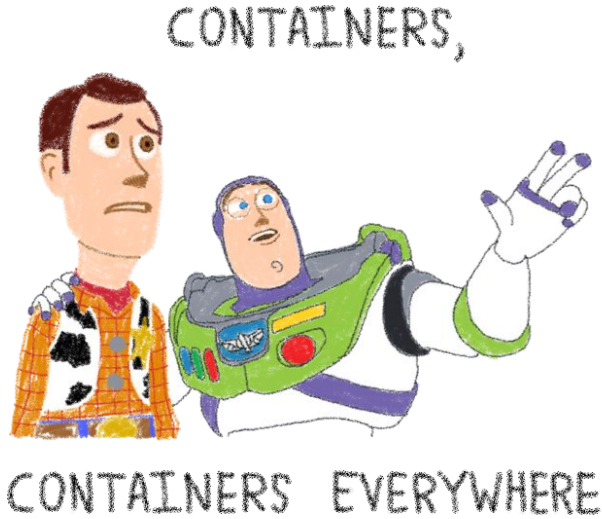


Declarative Infrastructure

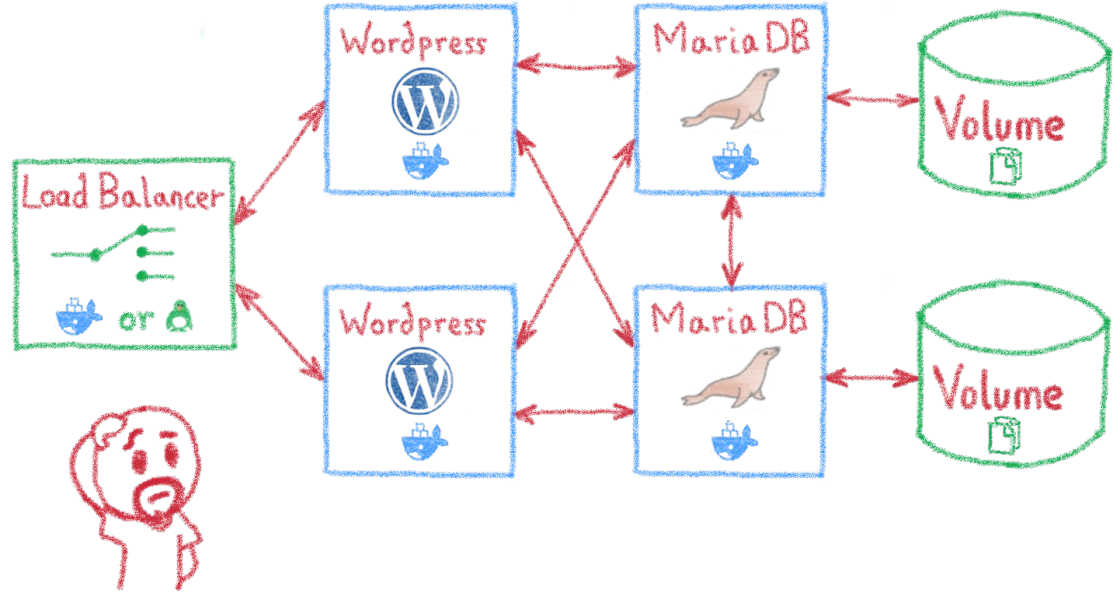
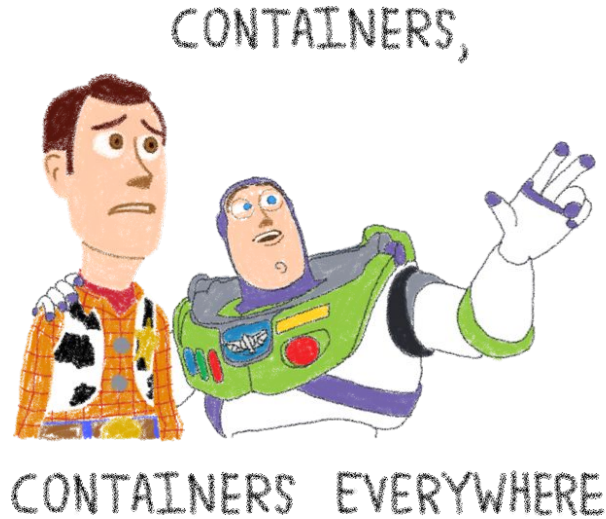
The intern metaphor



Containers make dev life easier

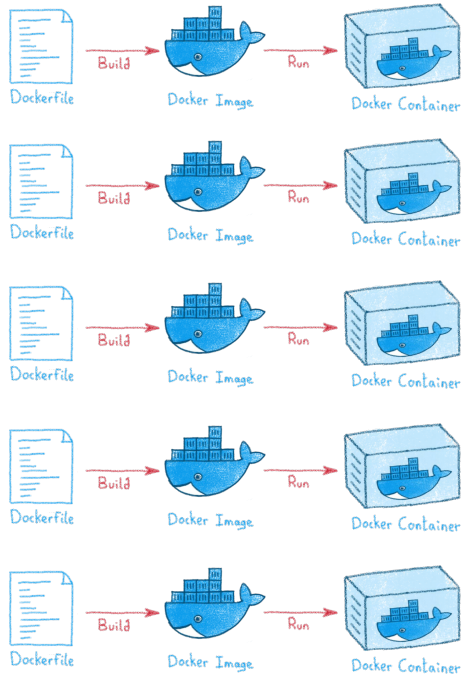


Less simple if you must operate them



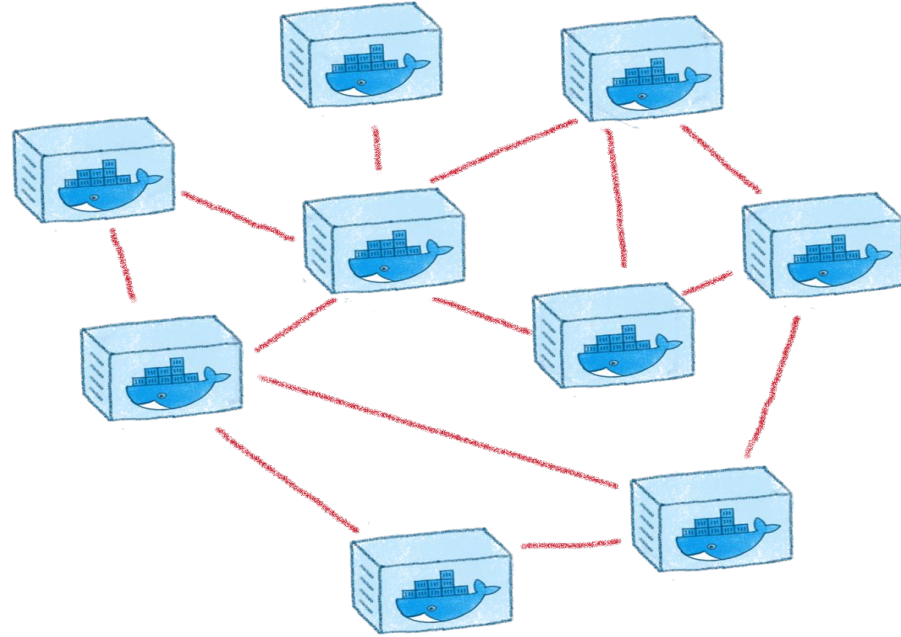
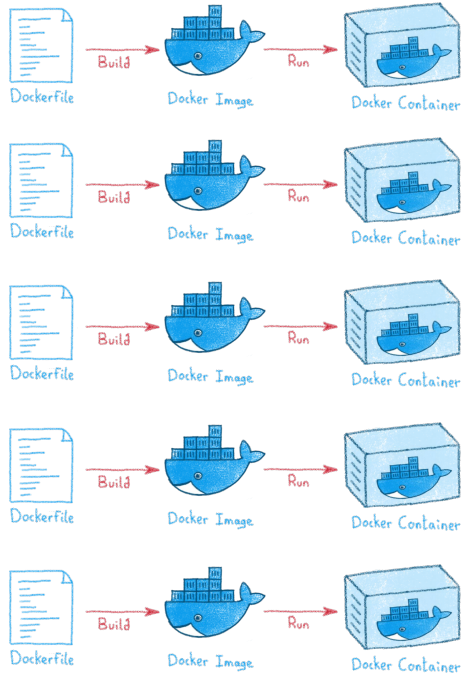
Like in a production context

And what about microservices?



Are you sure you want to operate them by hand?

And what about microservices?

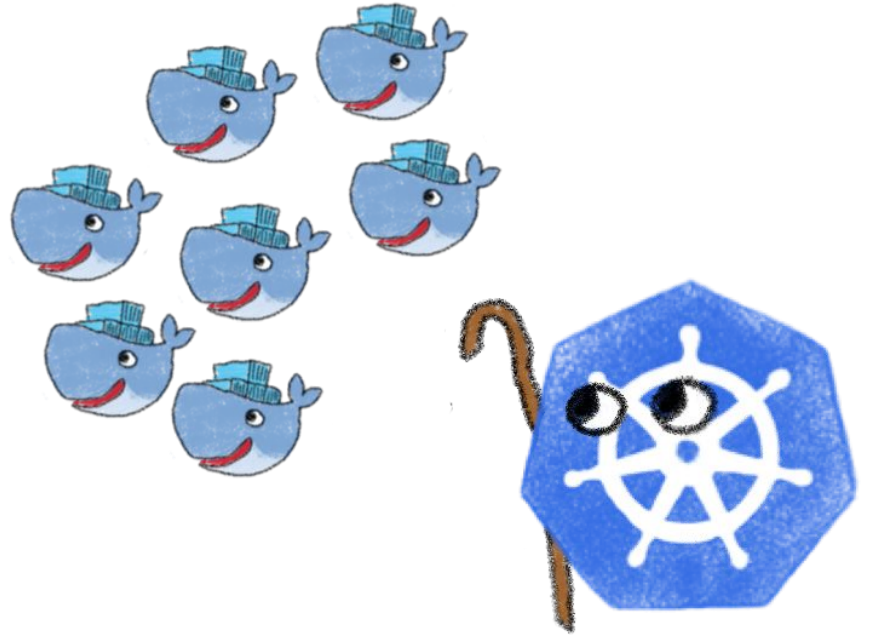


Are you sure you want to operate them by hand?

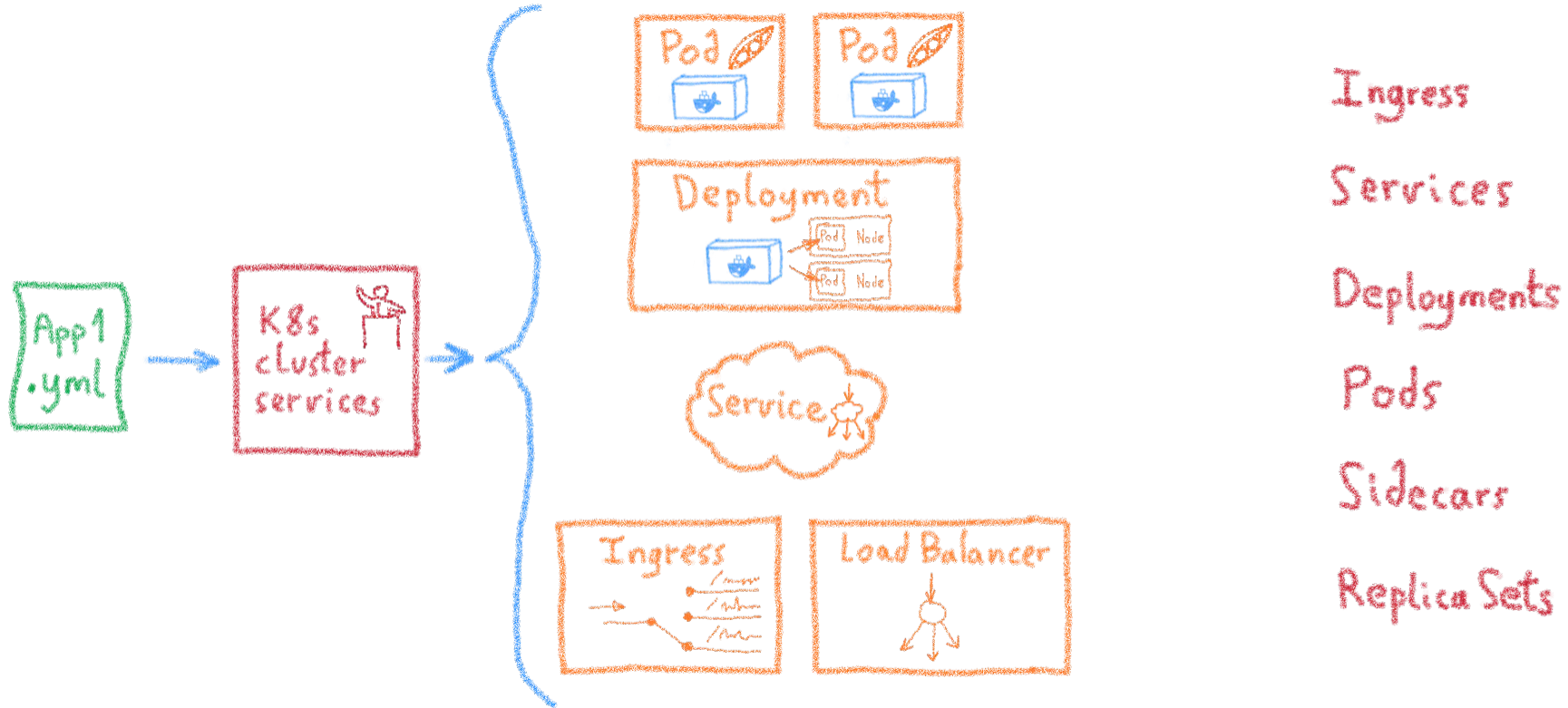
Kubernetes: a full orchestrator

Takes care of:

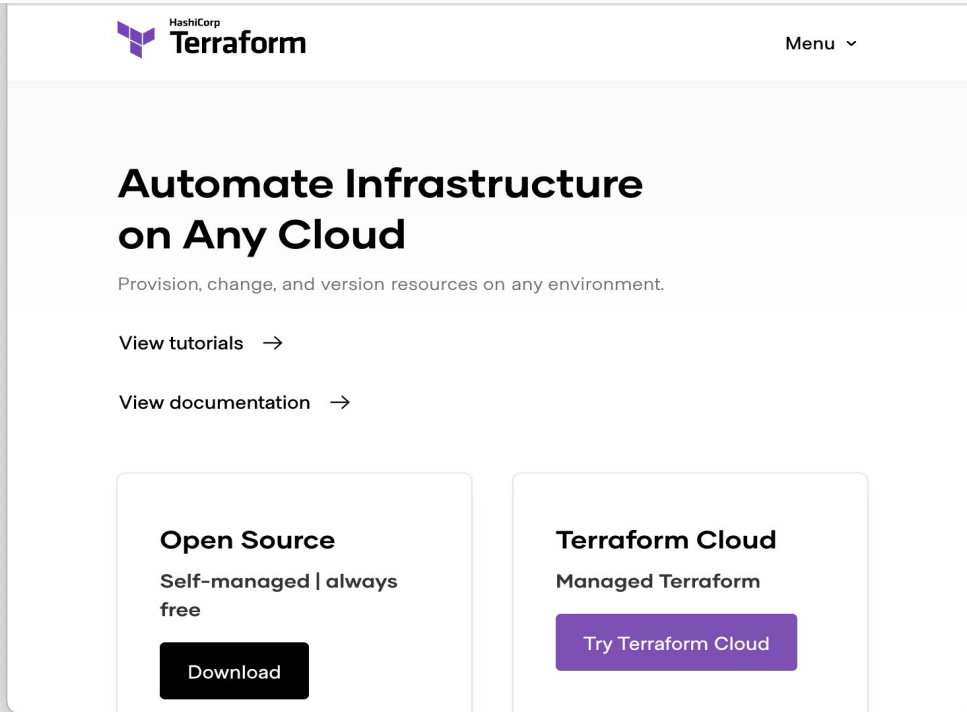
- Deployment
- Scaling
- Monitoring
- Repairing
- Securing
- ...



Kubernetes - Desired State Management






Terraform - Declarative infra as code



The screenshot shows the Terraform website homepage. At the top left is the HashiCorp Terraform logo, and at the top right is a 'Menu' dropdown. The main heading is 'Automate Infrastructure on Any Cloud', followed by the subtext 'Provision, change, and version resources on any environment.' Below this are two links: 'View tutorials →' and 'View documentation →'. At the bottom, there are two main sections: 'Open Source' with the text 'Self-managed | always free' and a 'Download' button, and 'Terraform Cloud' with the text 'Managed Terraform' and a 'Try Terraform Cloud' button.

Terraform

- Build 
- Modify 
- Version 

your infrastructure



GitOps

And other alternatives
(why not KafkaOps?)



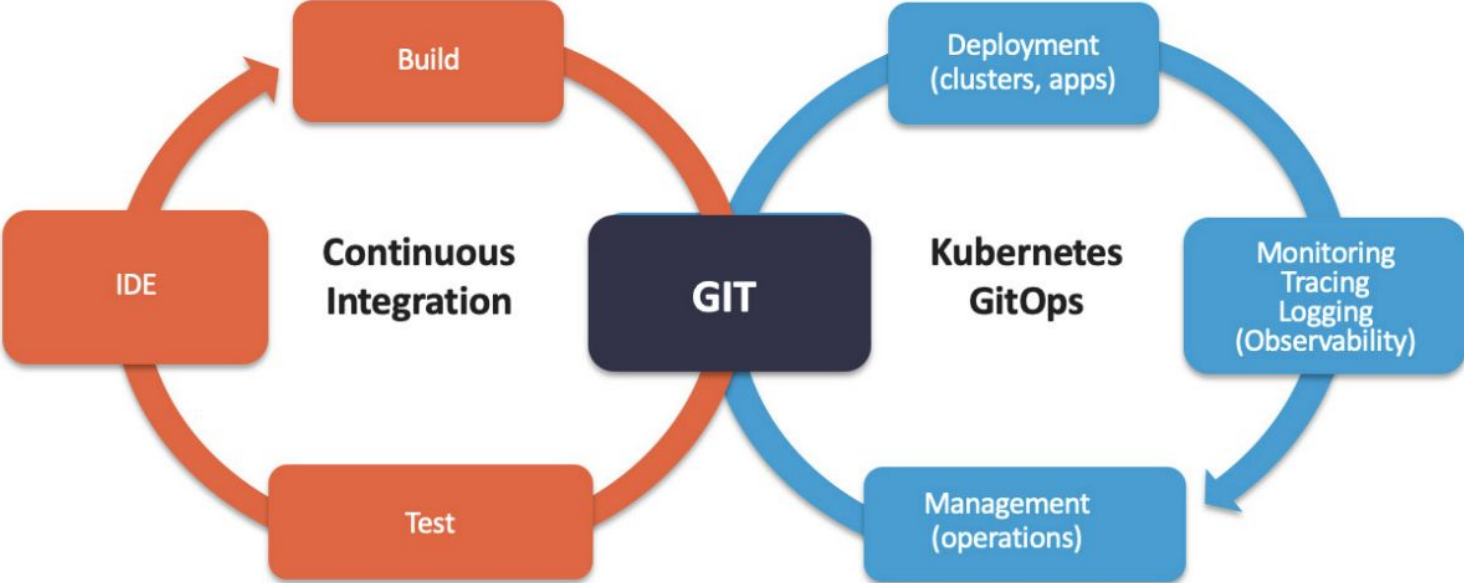
Continuous Integration(CI) & Continuous Delivery (CD)



Continuous Integration

Continuous Delivery

A central source of truth



What is GitOps?



Git is the
single source
of truth



Treat
everything as
code



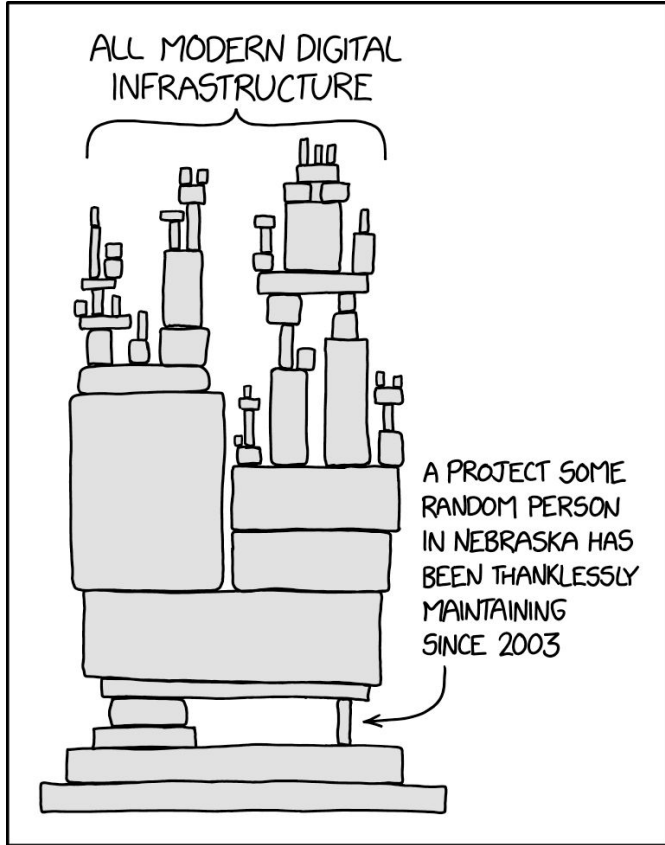
**Operations
through Git
workflows**



Platform

What is it? Why is it useful? 
Why do we need Platform Engineers?

A fancy name for something already there



Most companies already
have some kind of platform
Often homemade...

So many options ...

CNCF Cloud Native Landscape 1.0

Overwhelmed? Please see the CNCF Trail Map. That and the interactive landscape are at l.cncf.io

Grouped logos are not open source

The landscape is organized into several functional categories:

- App Definition and Development:** Database, Streaming & Messaging, Application Definition & Image Build, Continuous Integration & Delivery.
- Cluster Management & Management:** Scheduling & Orchestration, Coordination & Service Discovery, Remote Procedure Call, Service Proxy, API Gateway, Service Mesh.
- Runtime:** Cloud Native Storage, Container Runtime, Cloud Native Network.
- Provisioning:** Automation & Configuration, Container Registry, Security & Compliance, Key Management.
- Special:** Kubernetes Certified Service Provider, Kubernetes Training Partner, Certified CNF.

Additional sections on the right side include:

- Platform:** Certified Kubernetes - Distribution, Certified Kubernetes - Hosted, Certified Kubernetes - Installer, PaaS/Container Service.
- Services:** A dashboard view of various services.
- Members:** A list of CNCF members.
- CD Foundation Landscape:** A smaller version of the landscape focusing on Continuous Delivery.
- Observability and Analysis:** Monitoring, Logging, Tracing, Chaos Engineering, Continuous Optimization.

CLOUD NATIVE LANDSCAPE
A project of the Cloud Native Computing Foundation (CNCF)

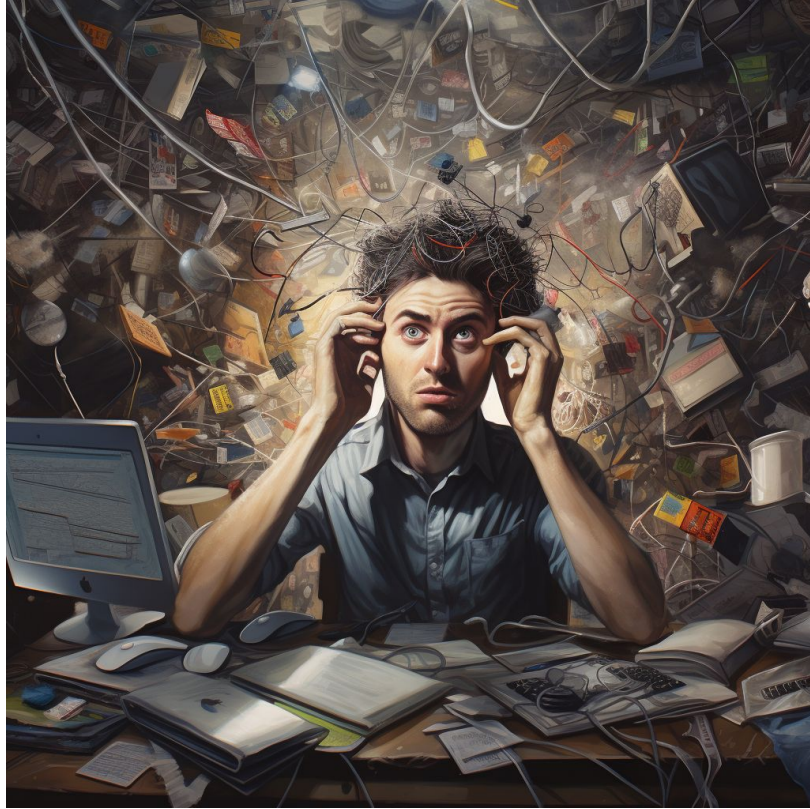
This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application with a CNCF Project representing a particularly well-traveled path.

l.cncf.io

So many options ...

<h3>CI</h3> <ul style="list-style-type: none">Circle CICodefreshGitHubBitbucketGitlabGitHub ActionsCodeDeployJenkinsTravisAzure DevOpsGoogle Cloud Build	<h3>Service Catalog/Developer Portal/Platform UI</h3> <ul style="list-style-type: none">BackstageLeanIXPort	<h3>Security</h3> <ul style="list-style-type: none">Azure SentinelSnykGremlinARMOArmoTigera
<h3>Registry</h3> <ul style="list-style-type: none">DockerAzure Container RegistryJfrogHarborAWS ECR RegistryGoogle Container Registry	<h3>Platform Orchestrator</h3> <ul style="list-style-type: none">Humanitec	<h3>Logging</h3> <ul style="list-style-type: none">Google StackdriverFluentbitLogzDatadog
<h3>Messaging</h3> <ul style="list-style-type: none">RabbitMQKafkaActiveMQ	<h3>CD/Operators</h3> <ul style="list-style-type: none">Argo CDJenkins	<h3>DNS</h3> <ul style="list-style-type: none">CloudflareRoute53Google Public DNS
<h3>Database & Storage</h3> <ul style="list-style-type: none">AivenPostgreSQLRedisAmazon S3MariaDBKafkaMySQLElasticsearchMongo DB	<h3>Kubernetes Control Plane</h3> <ul style="list-style-type: none">KubermaticRedhatRafayGiantswarmAmbassadorOketo	<h3>Infrastructure Control Plane</h3> <ul style="list-style-type: none">Terraform CloudAtlantisSpacelift
	<h3>Cloud Providers</h3> <ul style="list-style-type: none">AzureGoogle Cloud PlatformAmazon Web Services	<h3>IaC</h3> <ul style="list-style-type: none">PulumiTerraformCloudformation

Shift left and Cognitive Load



Managing the self-service commodity



*“The discipline of designing and building toolchains and workflows that enable self-service capabilities for software engineering organizations in the cloud-native era. Platform engineers provide an **integrated product** most often referred to as an “Internal Developer Platform” covering the operational necessities of the entire lifecycle of an application.”*

Lucas Galante



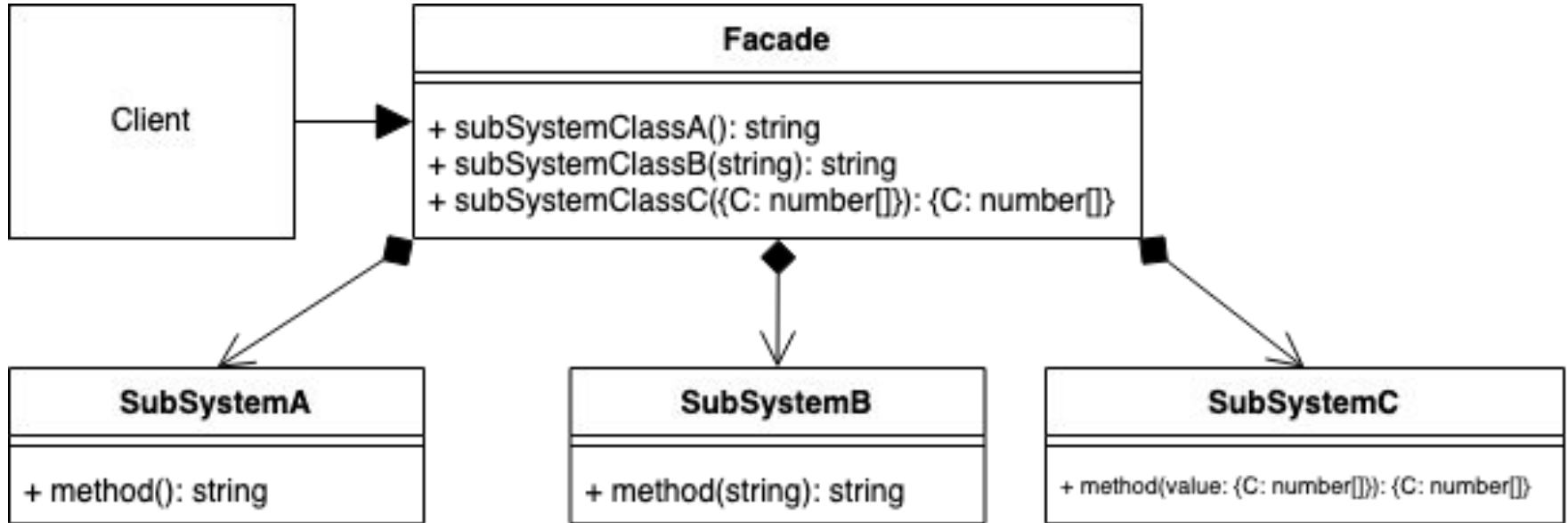
Rémi Verchère ❄️

@rverchere

bash will still be used

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IDP is the new Facade Pattern

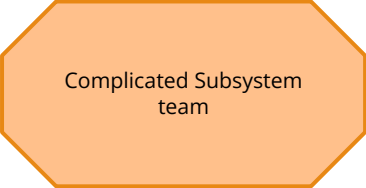
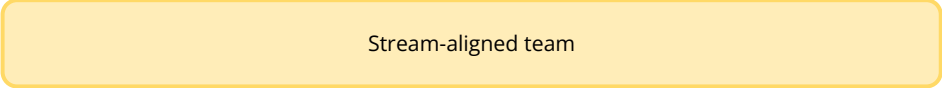


Team Topologies

“Organizations that consider establishing such a platform team should be very cautious not to accidentally create a separate DevOps team, nor should they simply relabel their existing hosting and operations structure as a platform.”

TechRadar, October 2021

Team Topologies



Platform as a Product

The Internal Dev Platform is the **Product**

- Conduct user research
 - Run friction logs
 - Empathy meetings
- Create a roadmap
- ...



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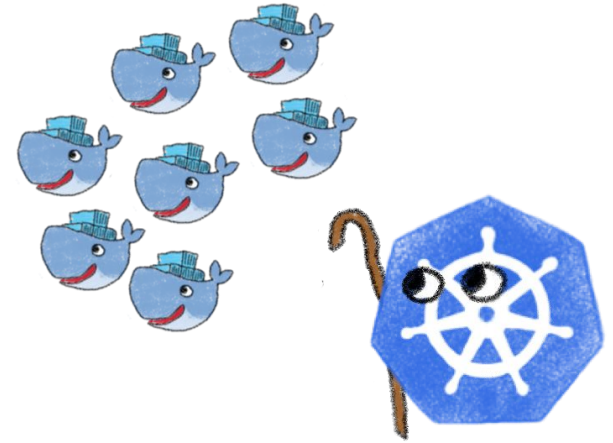
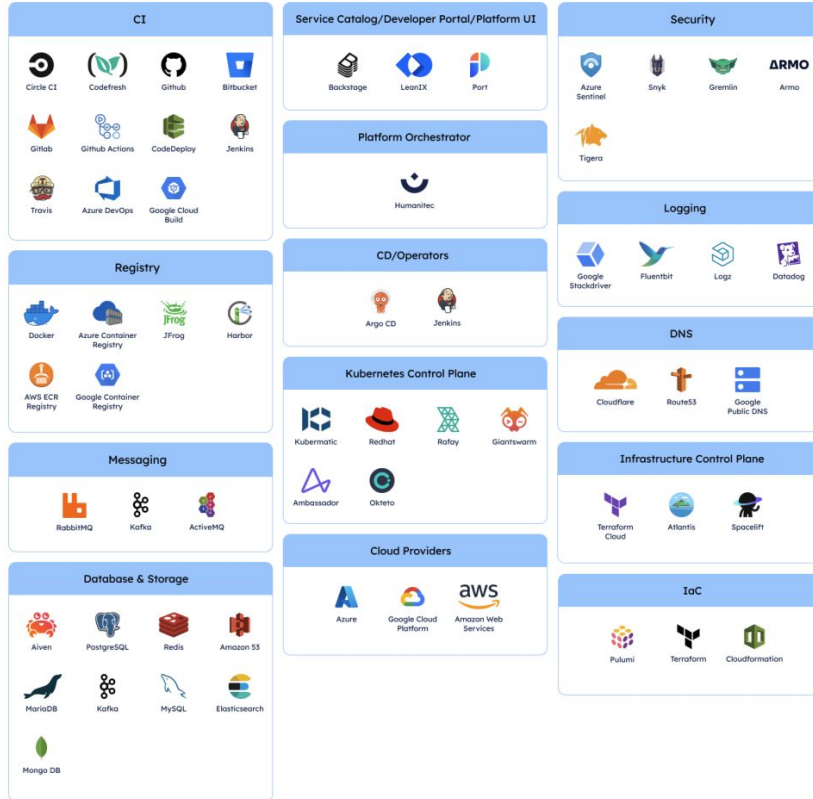


Build your own Platform

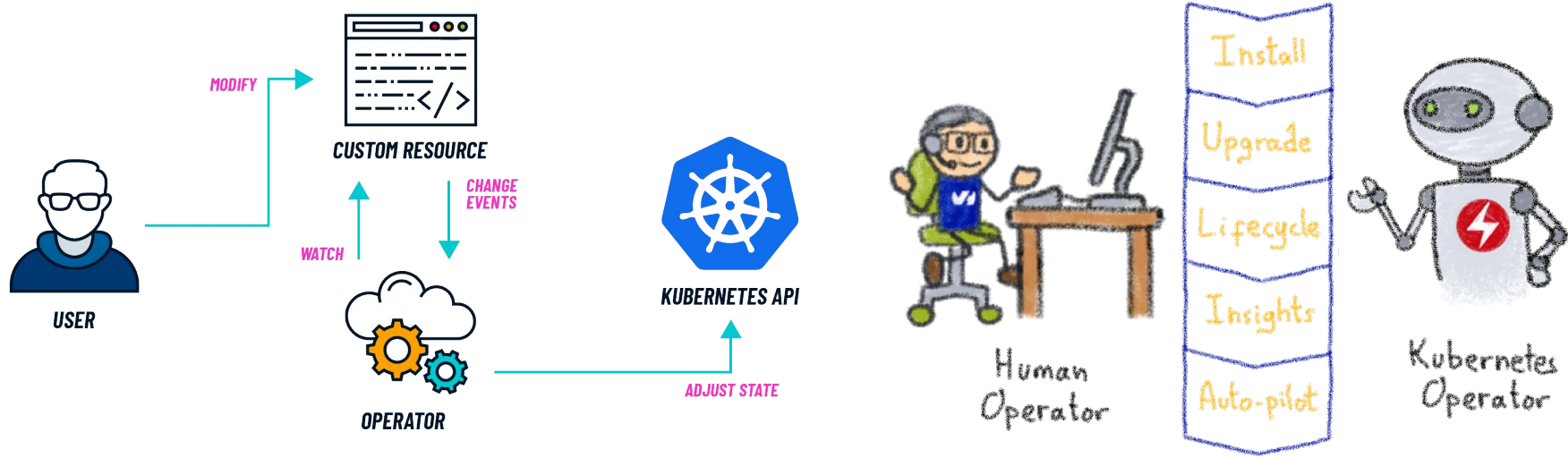
And becoming Platform Engineer ☁️



How to glue those all together ?

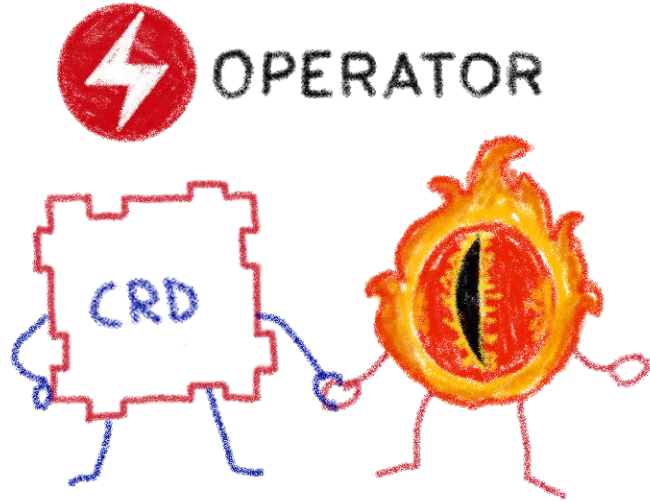


Kubernetes Operators



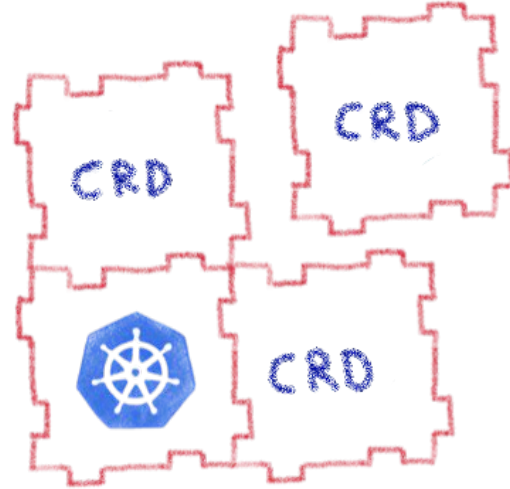
A Kubernetes version of the human operator

Building operators



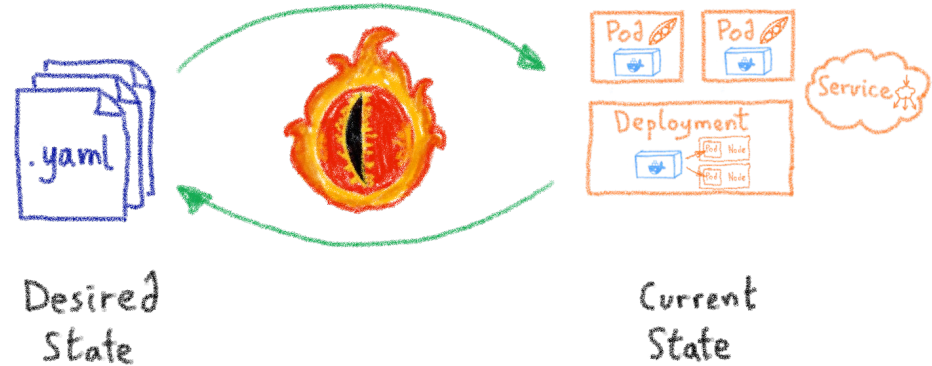
Basic K8s elements: Controllers and Custom Resources

Extending Kubernetes API



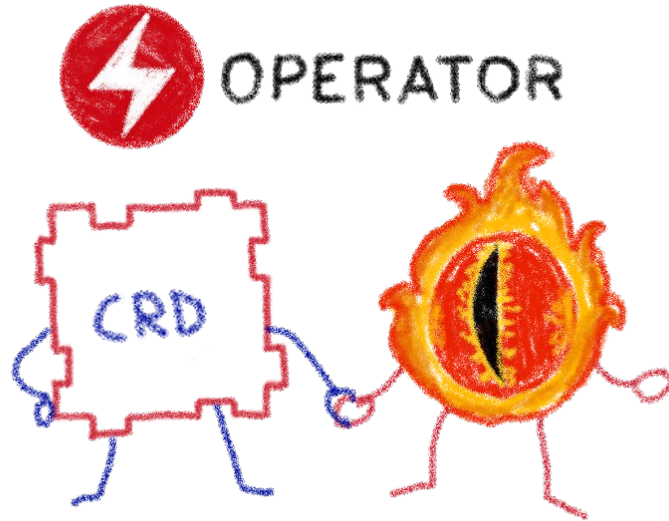
By defining new types of resources

A reconcile loop



Strives to reconcile current state and desired state

Custom Controllers for Custom Resources



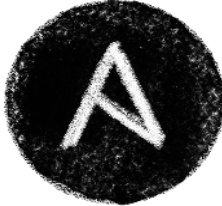
Operators implement and manage Custom Resources using custom reconciliation logic

Operator SDK



OPERATOR
SDK

BUILD
TEST
ITERATE



ANSIBLE



Three different ways to build an Operator

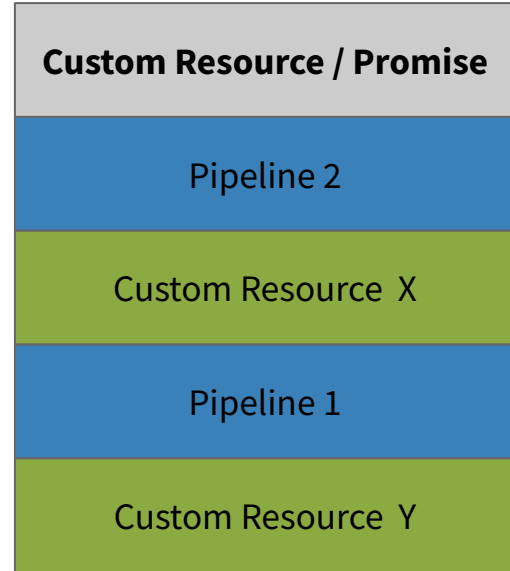
How to assemble all those building bricks ?



Platform Building Frameworks



“A framework for building platforms”





Rémi Verchère ❄️

@rverchere

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Cloud Sud

MERCI À NOS SPONSORS

alter way
A SMILE GROUP COMPANY

Les Filles & Les Garçons
DE LA TECH

 **ippon**
POSITIVE TECHNOLOGY