

From Silos to DevOps to Platform Engineering

Embracing GitOps and going behind the hype



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Horacio Gonzalez



clever cloud



Who are we?



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clever cloud

@LostInBrittany

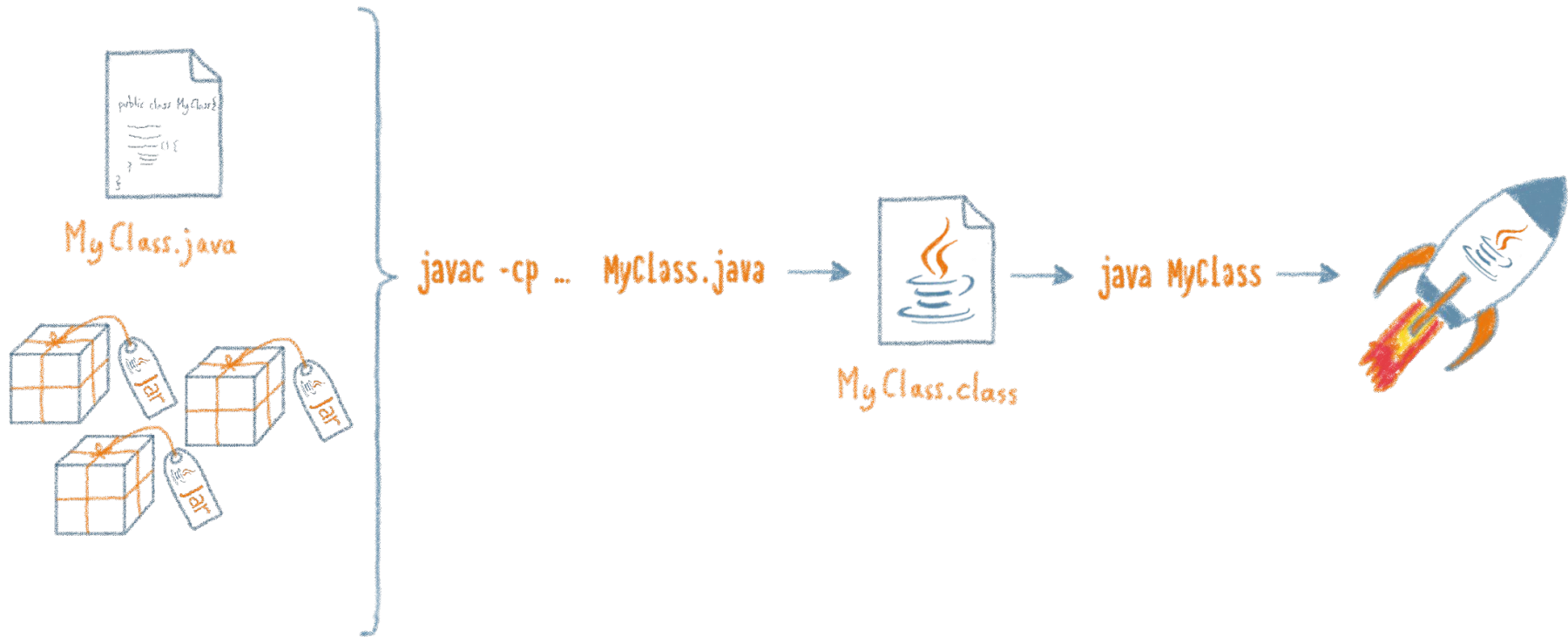


Adding layers of shiny complexity

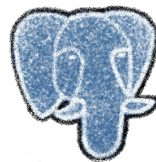
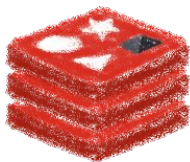
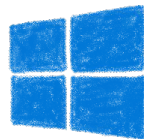
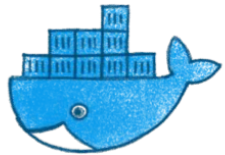
Last 30 years in software development



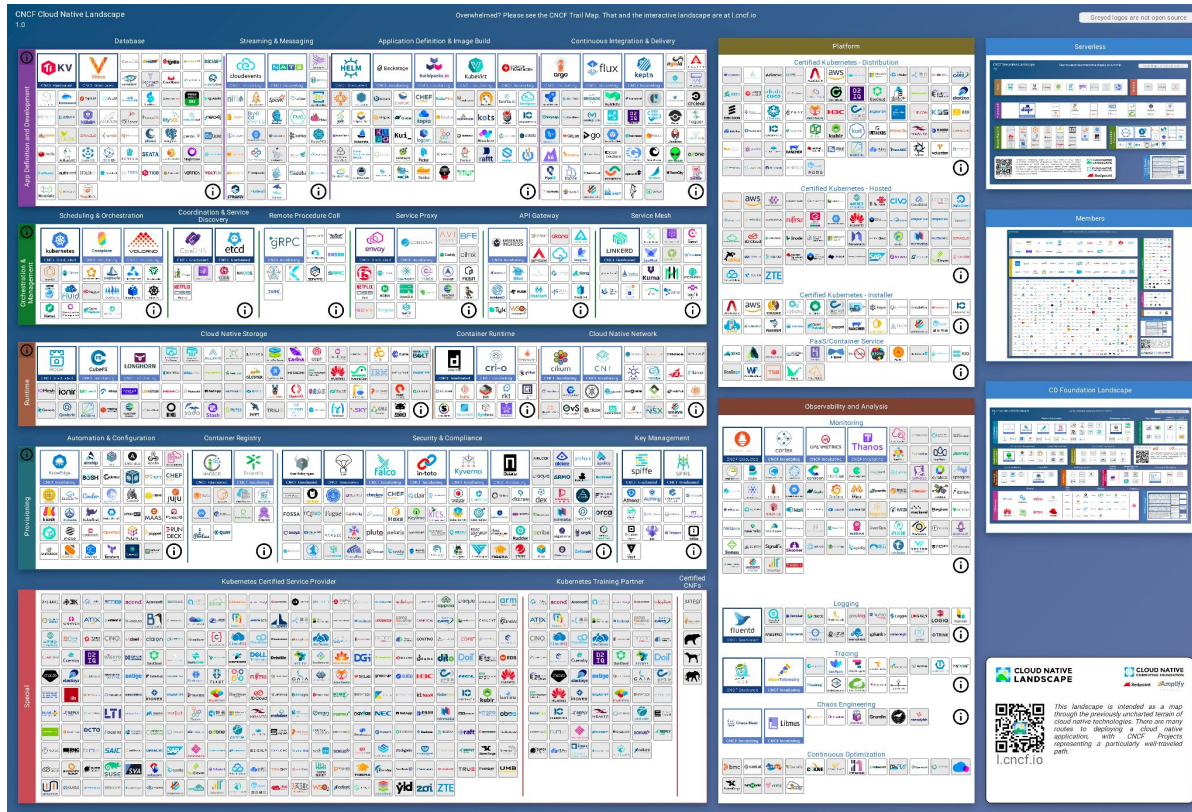
From write-compile-exec to Kubernetes



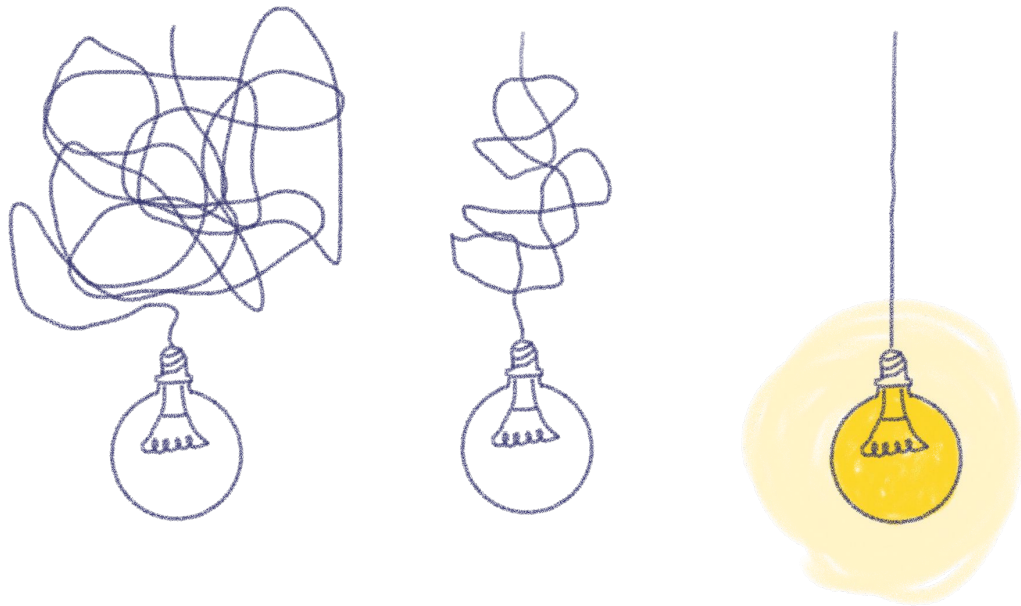
From write-compile-exec to Kubernetes



If I were a student now, I would feel scared



Platform Engineering to the rescue



Empowering developers while reducing complexity

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



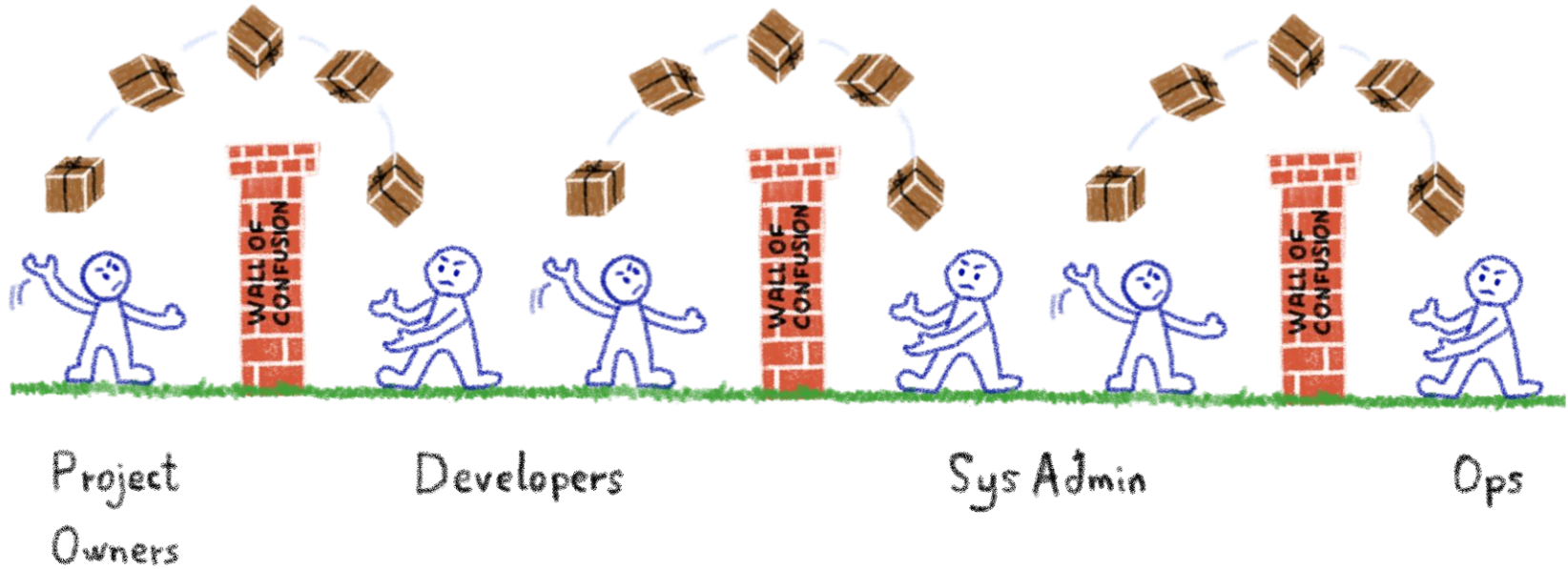
Control, reliability, security...
But cost, rigidity, logistics...

Applying the industrial model



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

Walls & Silos



And procedures, and hierarchy, and corporate politics

Why are we managing IT like factories?



Because we didn't know otherwise?



Rémi Verchère ❄️
@rverchere

bash will still be used

7:46 PM · Aug 8, 2023 · **290** Views

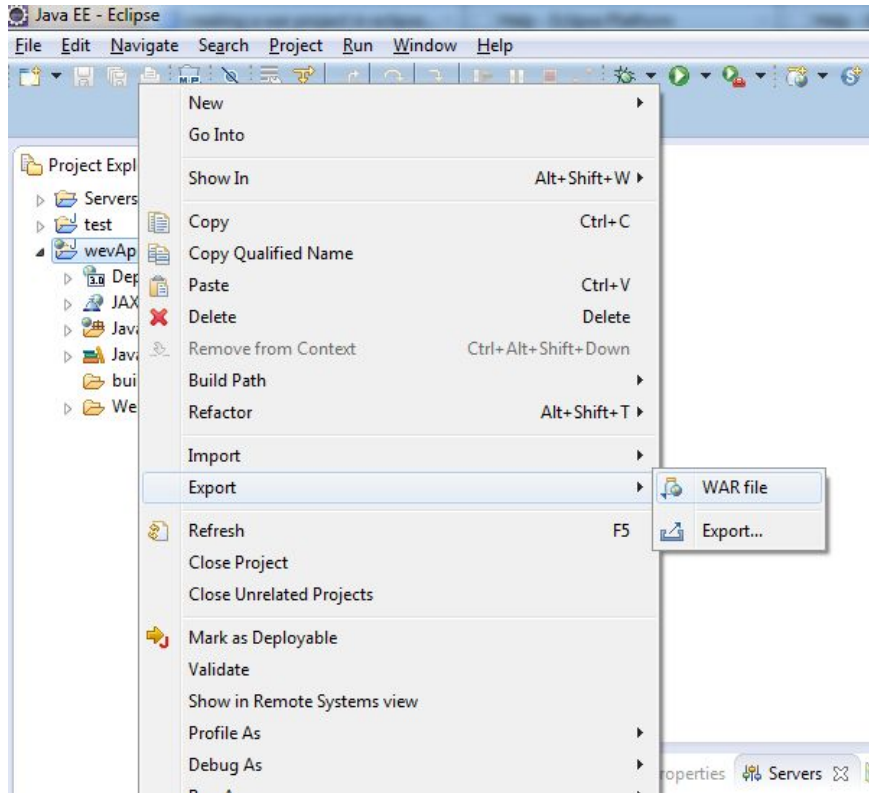


Tooling evolves

CVS, Ant and (Leeeroy) Jenkins



Old school procedures



commons
IO

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); failing 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



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

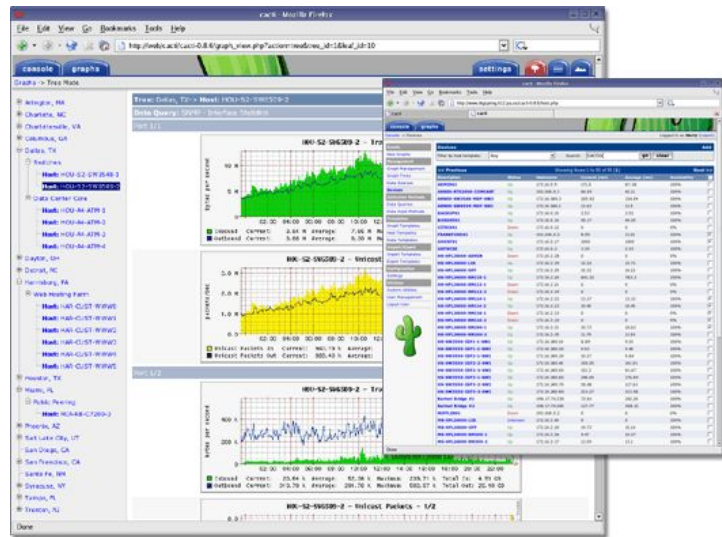
If Testing is Doubting, let's doubt automatically

Monitoring tools



Nagios

ZABBIX



No more spending nights looking at a status screen

So many more possibilities...



So much more complexity!



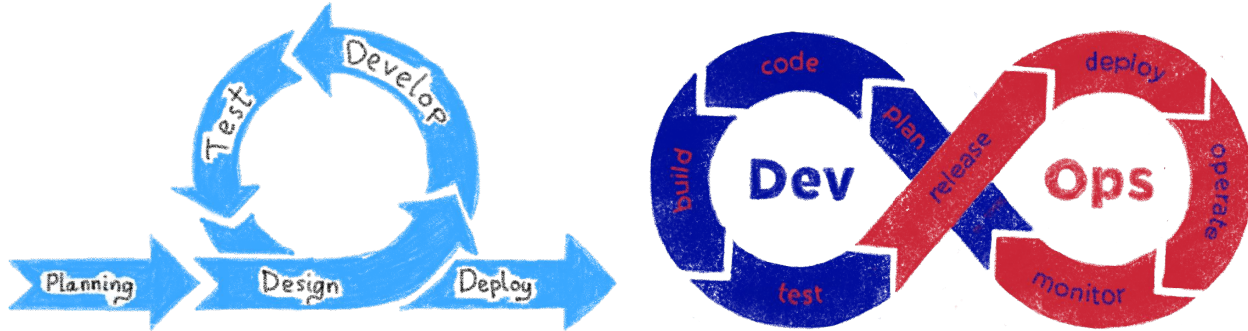
Rémi Verchère ❄️
@rverchere

bash will still be used

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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](#)

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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

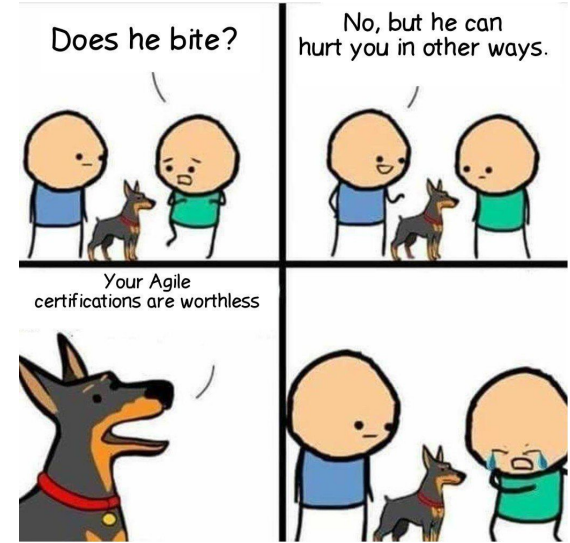
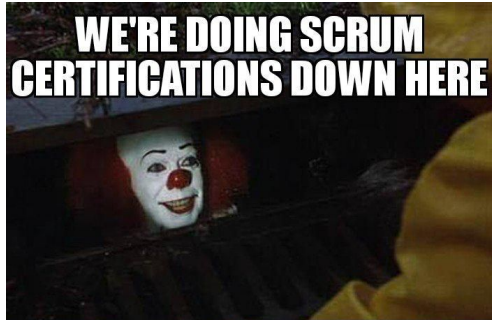
That is, while there is value in the items on the right, we value the items on the left more.



Breaching walks, breaking down silos

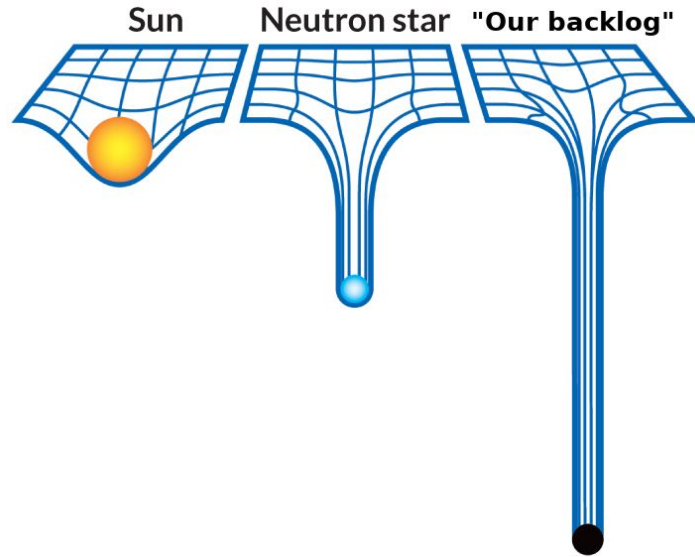


The business of Agility

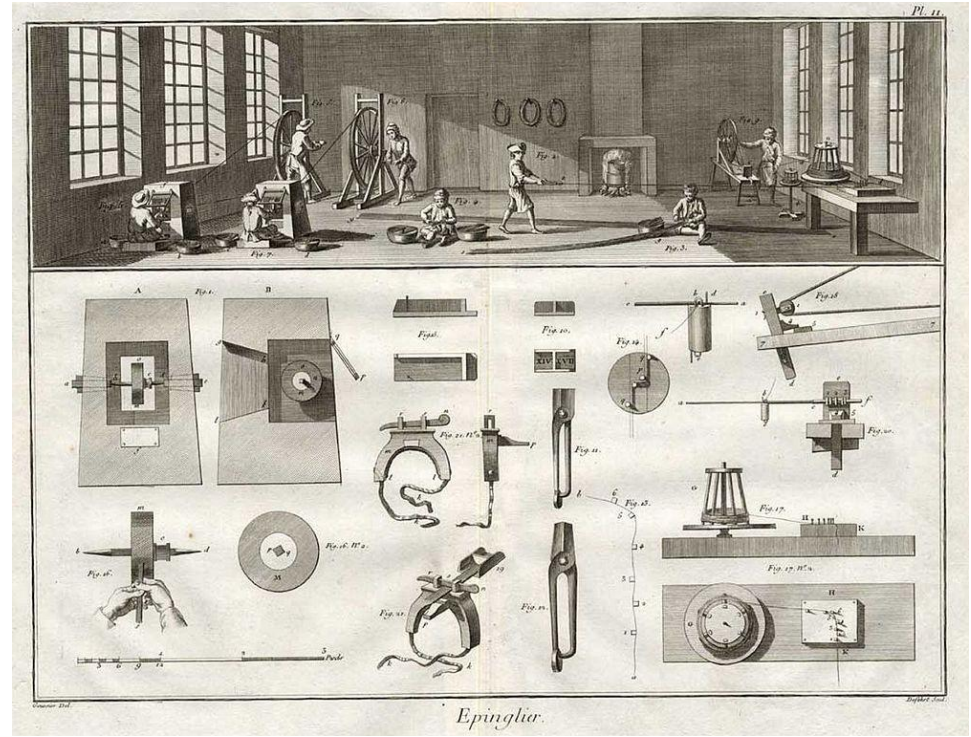


The Dark Side rises

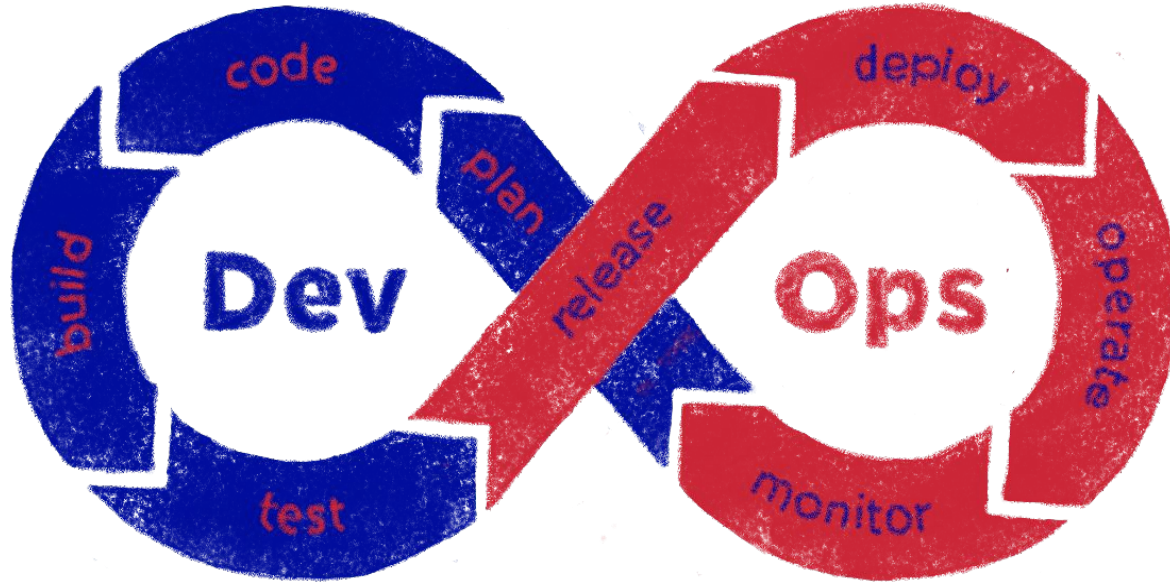
Agile Tooling



Back to industrial practices ?



DevOps: breaking Dev and Ops Silos

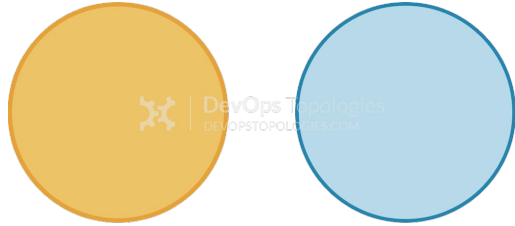


DevOps is a reaction to the wall of confusion



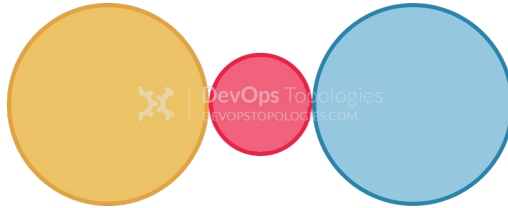
Making the different stakeholders
to work together in sync

DevOps anti patterns



• Dev

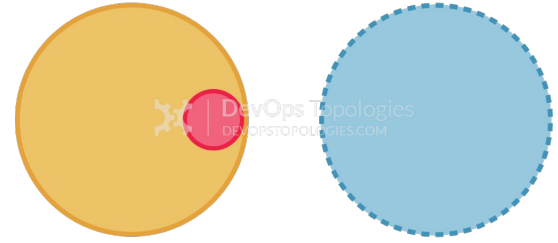
• Ops



• Dev

• DevOps

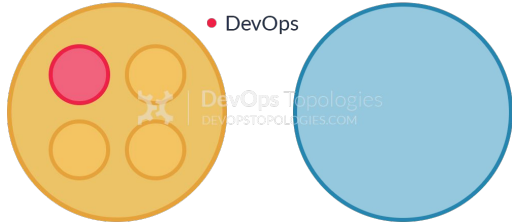
• Ops



• Dev

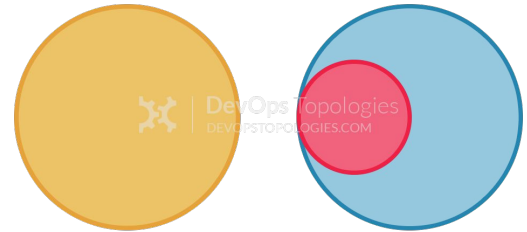
• DevOps

• Ops



• Dev

• Ops



• Dev

• DevOps

• Ops

More in [DevOps Topologies](https://devopstopologies.com) site

DevOps also has another Dark Side



A DevOps engineer is an IT generalist who should have a wide-ranging knowledge of both development and operations, including coding, infrastructure management, system administration, and DevOps toolchains.

WTF is a DevOps Engineer? And a DevSecOps?
A DevMlOps? A DevAiDataSecOps? A Dev*Ops?

So we have Cults of Agility and Dev*Ops



And so much more complexity!



Rémi Verchère ❄️
@rverchere

bash will still be used

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Enter the Cloud

Renting server time in other's people infra

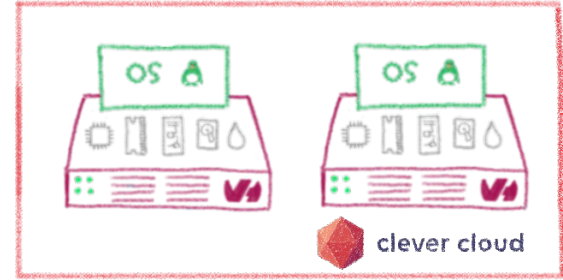
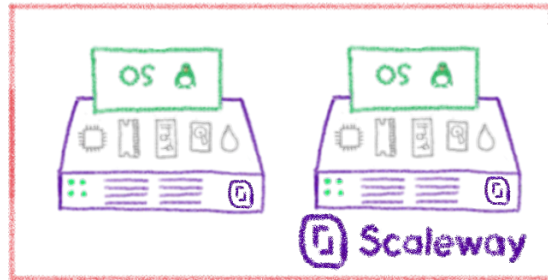
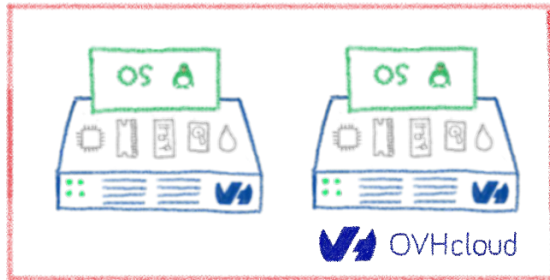
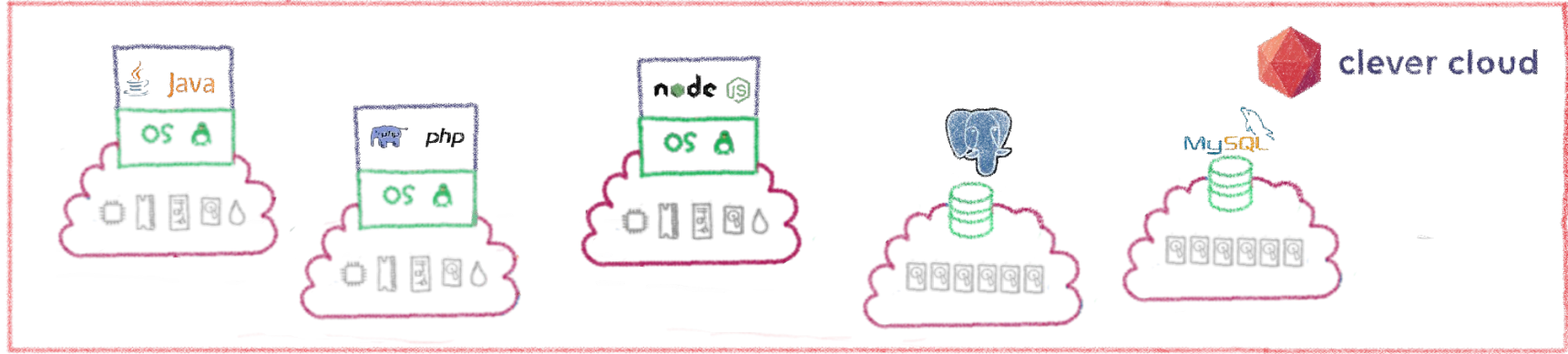


From virtualisation to the cloud



How to use the infrastructure at its full capacity

Cloud demands automation



It changes the way how IT works

Bon de commande

Logo

Monsieur Dupont

22, Avenue Voltaire
13000 Marseille, France
Téléphone : +33 4 92 99 99 99

Date :	4.8.2020
Bon de commande N° :	123
Número de client :	456
Méthode de paiement :	30 jours
Modes de paiement :	CB / Chèque
Emité par :	Pierre Fournisseur
Contact client :	Michael Acheteur
Téléphone du client :	04 82 85 35 56

Destinataire

Acheteur SA
Michael Acheteur
31 rue de la Fonté
13100 Aix-en-Provence
France

Informations additionnelles

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


Réf. produit	Description	Quantité	Unité	Prix unitaire HT	% TVA	Total TVA	Total TTC
1234567895	Main-d'œuvre	5	h	60,00 €	20 %	60,00 €	360,00 €
9876543218	Produit	10	pcs	105,00 €	20 %	105,00 €	1.260,00 €
						Total HT	1 350,00 €
						Total TVA	270,00 €
						Frais de livraison	35,99 €
						Total TTC	1 655,99 €

Signature :

Entreprise
22, Avenue Voltaire
13000 Marseille,
France
N° Siret ou SIREN : XXXXXVVEY 123
N° TVA intr. : FRXXX 999999999

Coordonnées
Pierre Fournisseur
Phone : +43 30 123456789
E-mail : Pierre@compagnie.fr
www.compagnie.fr

Détails bancaires
Banque : BP Paribas
Compte bancaire : 10000000
N° de compte : 12345678
SWIFT : FRFR33PARIBAS
Régime fiscal : 10001

Dashboard

Bare Metal Cloud

Instances

Storage

Block Storage

Object Storage

Cloud Archive

Cold Archive

Databases

Volume Snapshots

Volume Backup

Instance Backup

Network

Private Network

Public IPs

Gateway

Containers & Orchestration

Load Balancer

Managed Kubernetes Service

Managed Private Registry

Workflow Management

AI & Machine Learning

Hosted Private Cloud

Public Cloud

Web Cloud

Telecom

Sunrise

Marketplace

English

Horacio Gonzalez

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)

And it demands a mentality change



@Sebi2706 - @LostInBrittany

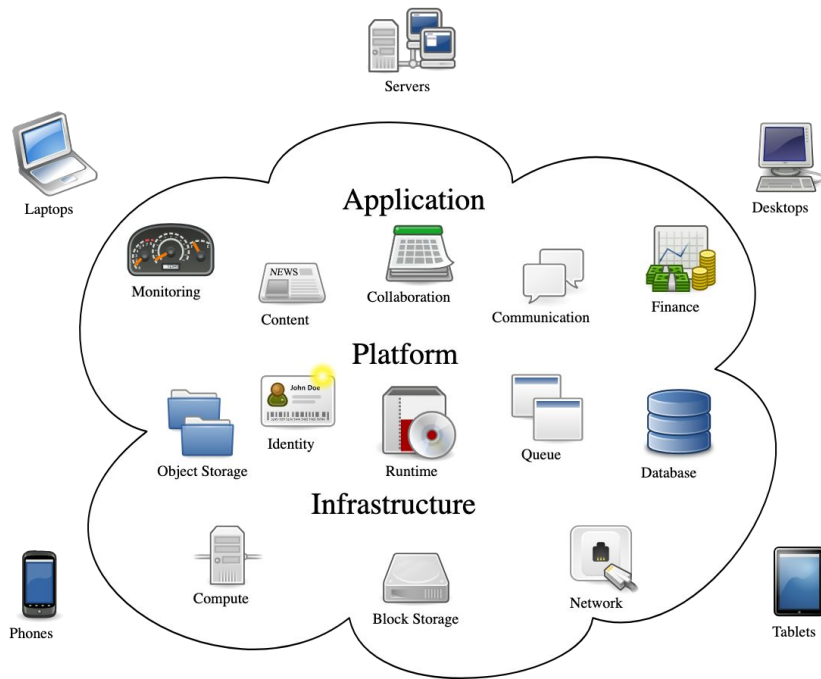


Empowering developers



Infrastructure is only a click away

Distributed is the new black



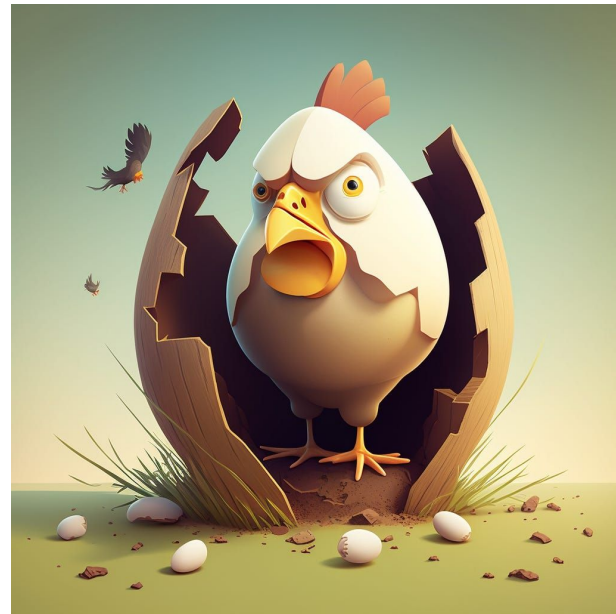
Cloud Native architectures and services

Sysadmins who code



Creating tools: automation, monitoring, observability...

New roles appear: SRE



WTF is a System Reliability Engineer?

250 cloud products only in this provider...



And so much more complexity!



Rémi Verchère ❄️
@rverchere

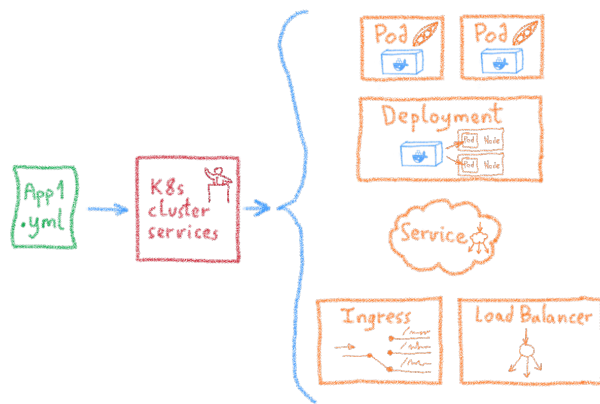
bash will still be used

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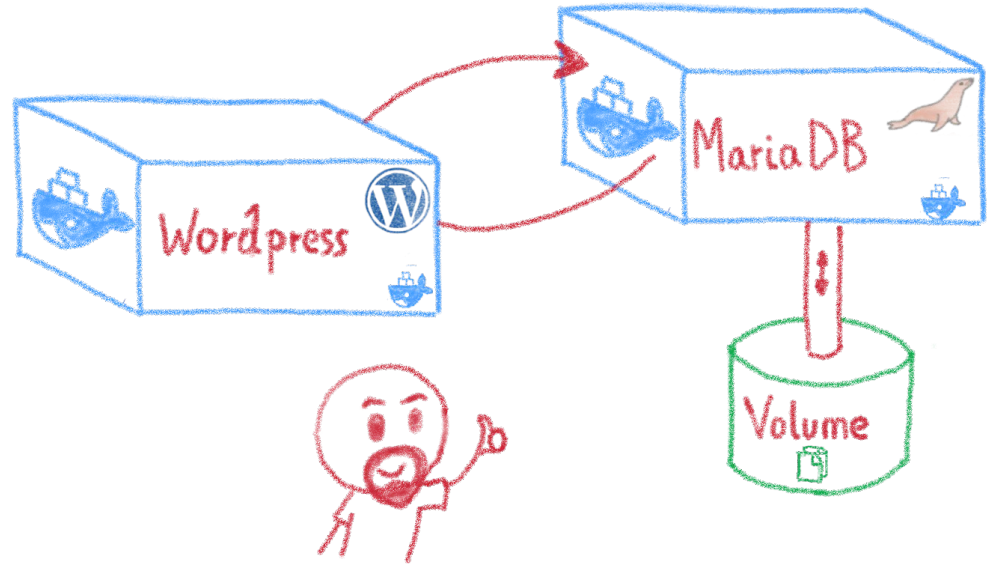
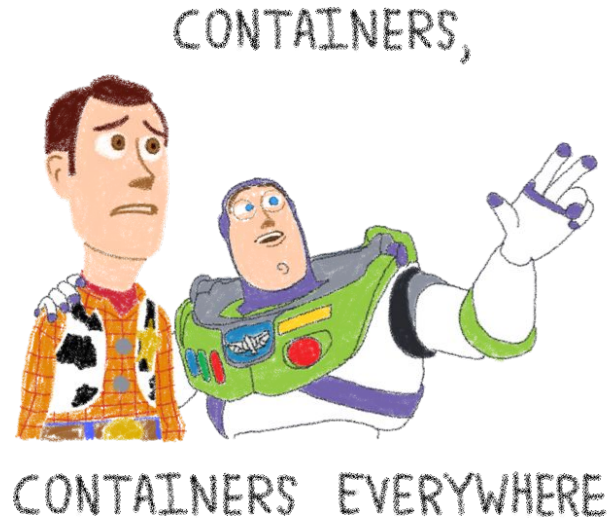


Declarative Infrastructure

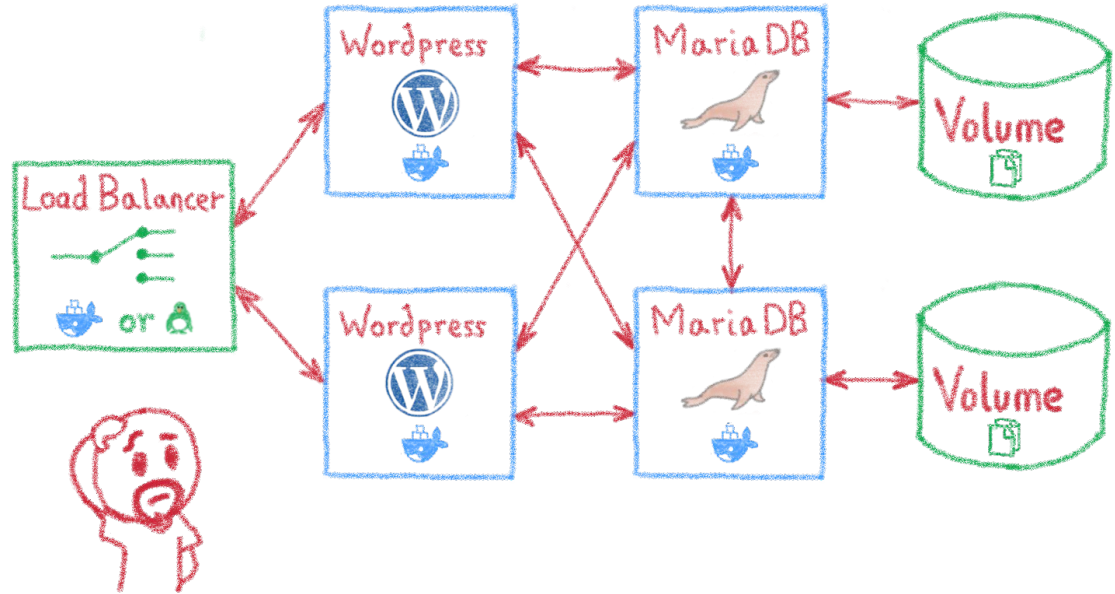
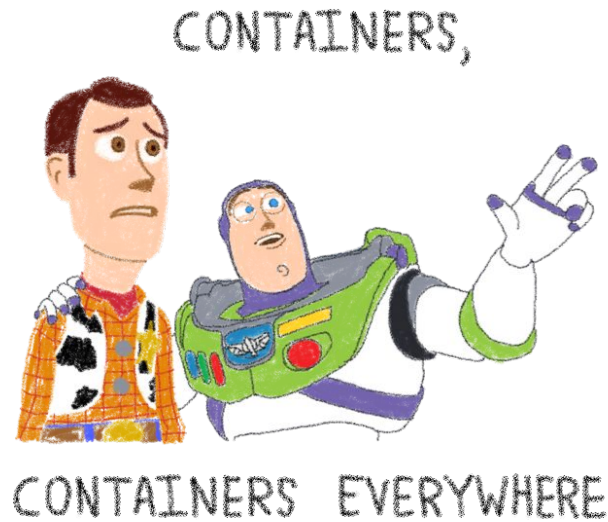
The intern metaphor



Containers make dev life easier

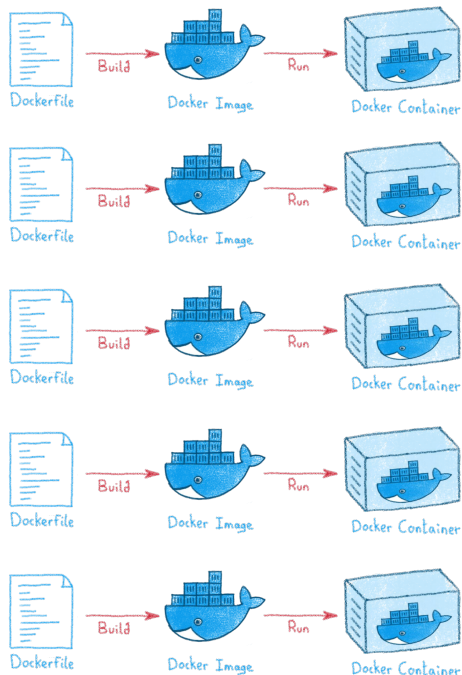


Less simple if you must operate them



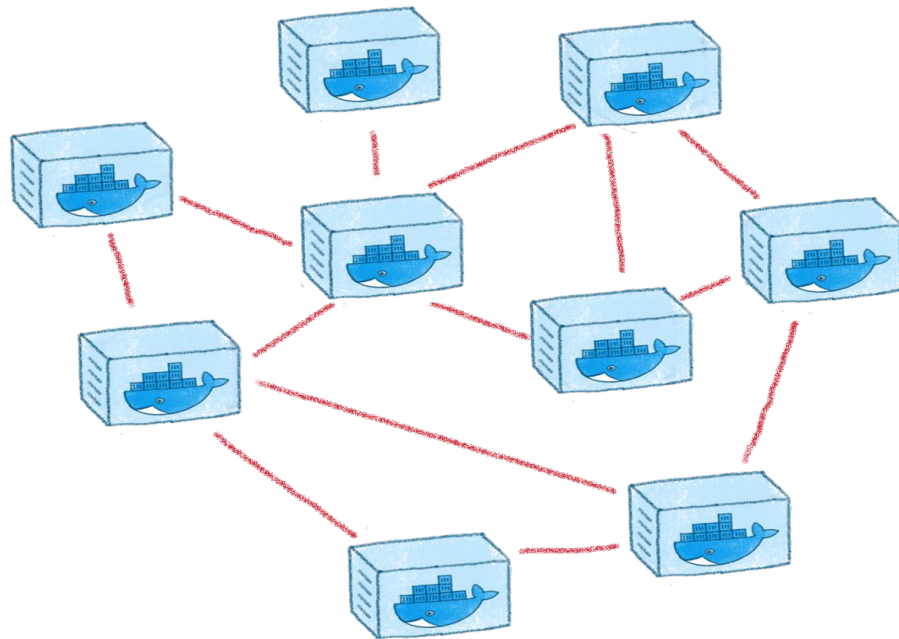
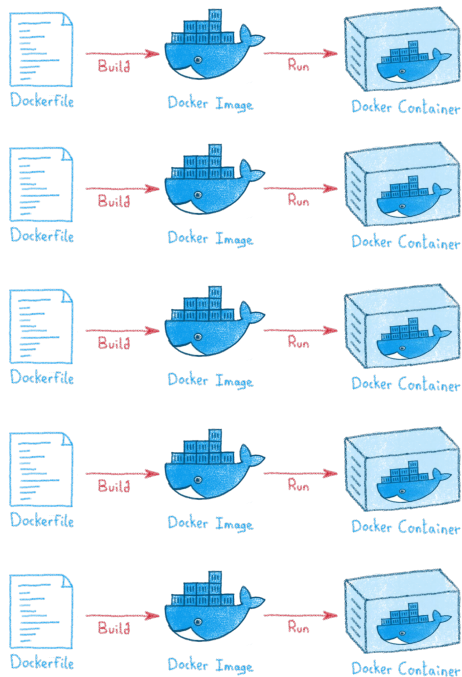
Like in a production context

And what about microservices?



Are you sure you want to operate them by hand?

And what about microservices?

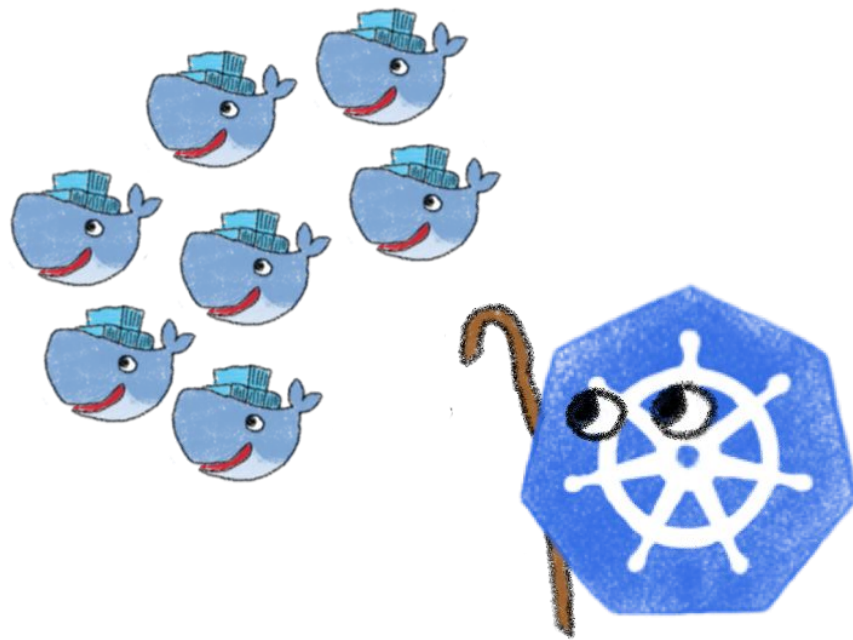


Are you sure you want to operate them by hand?

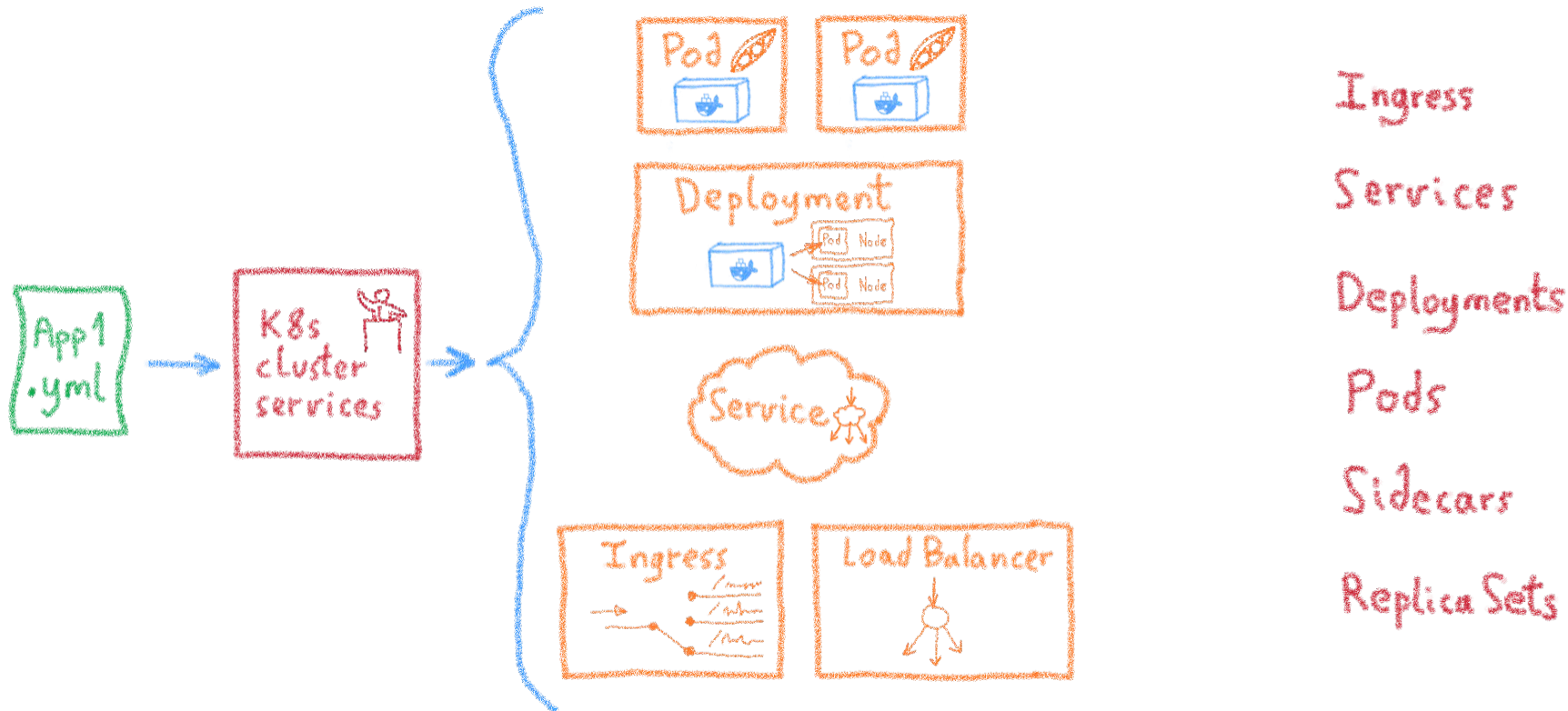
Kubernetes: a full orchestrator

Takes care of:

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



Kubernetes - Desired State Management



Infrastructure as Code



• Build



• Modify



• Version



your infrastructure

Containers? Pods? Ansible? Terraform?



So much more complexity!



Rémi Verchère ❄️
@rverchere

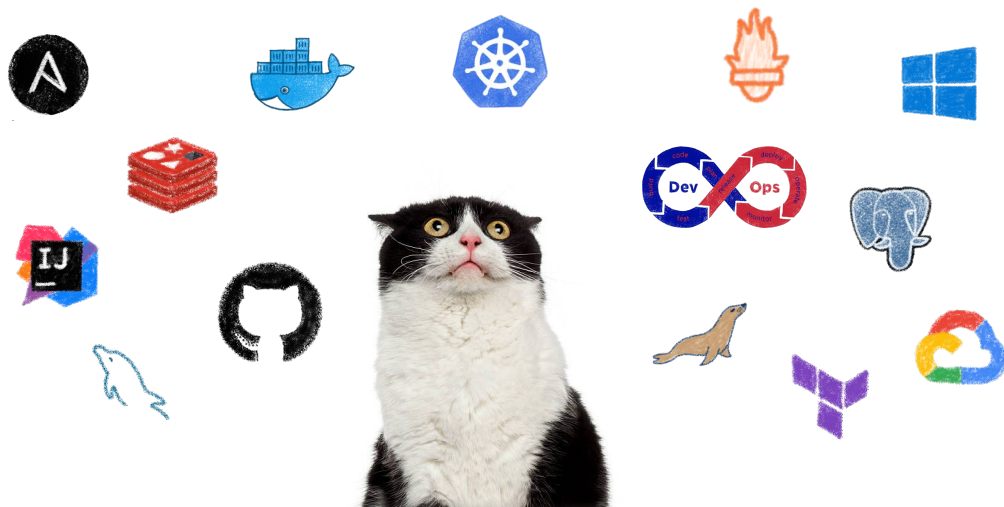
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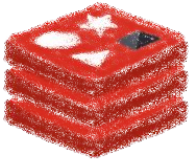
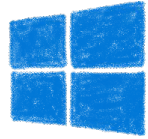
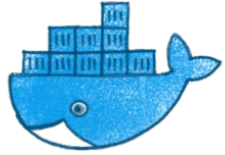


Becoming a developer in 2024

Do I need to know all that?



So many things to learn...



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

Cloud logos are not open source

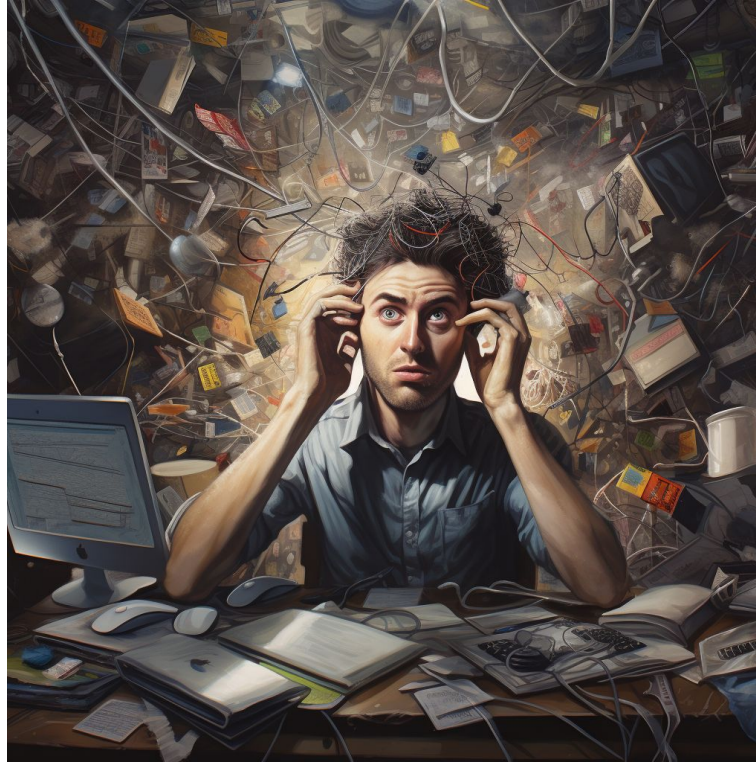
The image displays a vast collection of logos for various cloud native technologies, organized into a grid. The logos are categorized into several sections, including Database, Streaming & Messaging, Application Definition & Image Build, Continuous Integration & Delivery, Platform, Serverless, Members, CD Foundation Landscape, Observability and Analysis, Monitoring, Logging, Tracing, Chaos Engineering, and Continuous Optimization. The logos represent a wide range of companies and projects, including AWS, Azure, Google Cloud, Kubernetes, and many others. The grid is organized into rows and columns, with each logo accompanied by a small icon or logo. The overall layout is clean and professional, with a blue and white color scheme.



Managing the self-service commodity



Shift left and Cognitive Load



Platform Engineering to the rescue

Without adding more complexity?



What's Platform Engineering?

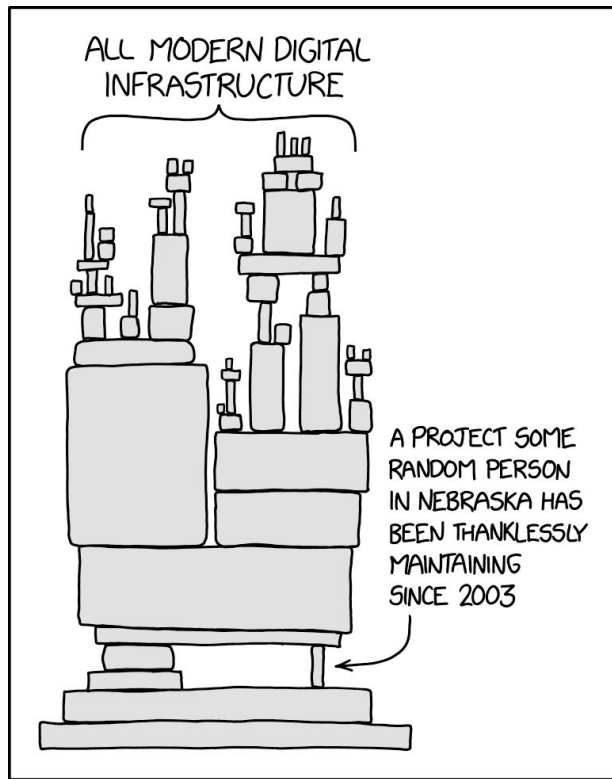
Platform engineering is the discipline of designing and building toolchains and workflows that enable self-service capabilities for software engineering organizations in the cloud-native era.

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.

Lucca Galante

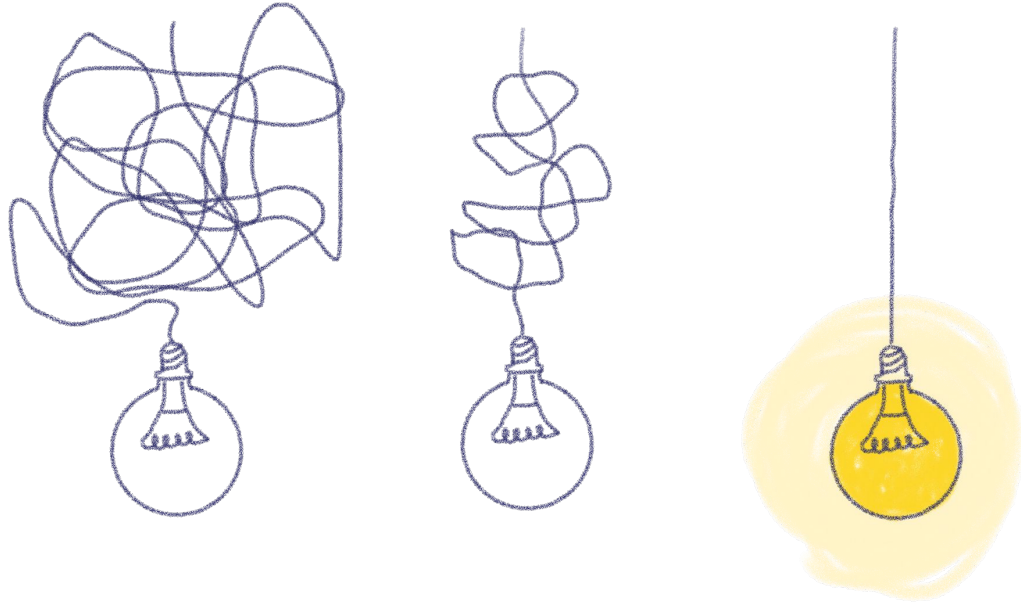


A fancy name for something already there



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

The purpose of Platform Engineering



Empowering developers while reducing complexity

But how can we create them?





GitOps



What is GitOps?



Git is the
single source
of truth



Treat
everything as
code



Operations
through Git
workflows

Benefits of GitOps



- Collaboration
- Visibility & auditing
- Security & reliability
- Provisioning & deployment


Team Topologies

It's not only a tool, but an organisation



Team Topologies

4 fundamental topologies

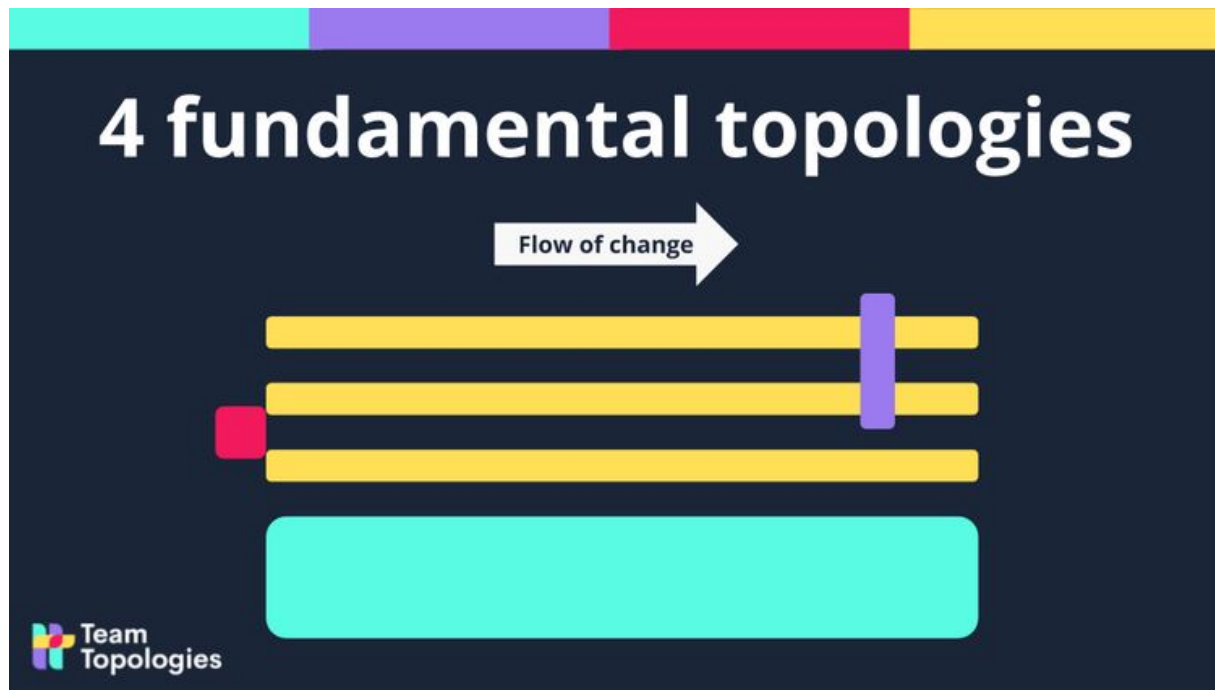
-  Stream-aligned team
-  Enabling team
-  Complicated Subsystem team
-  Platform team



<https://teampologies.com/>

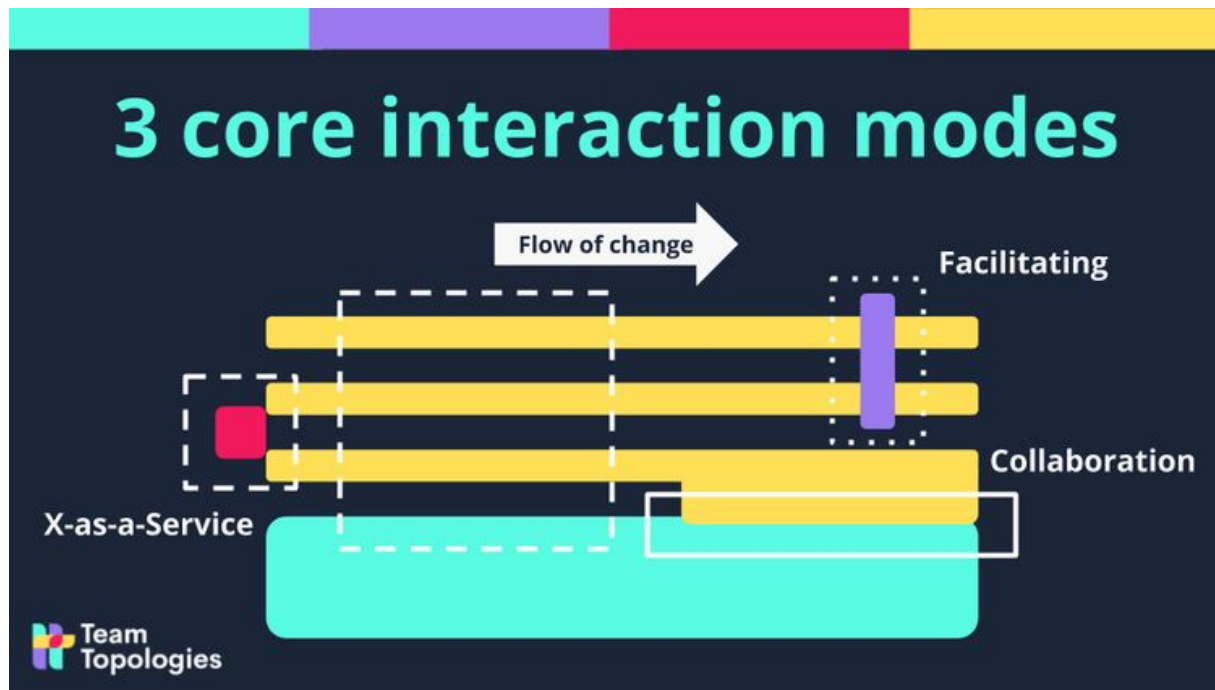


Team Topologies



<https://teamtologies.com/>

Team Topologies



<https://teampologies.com/>

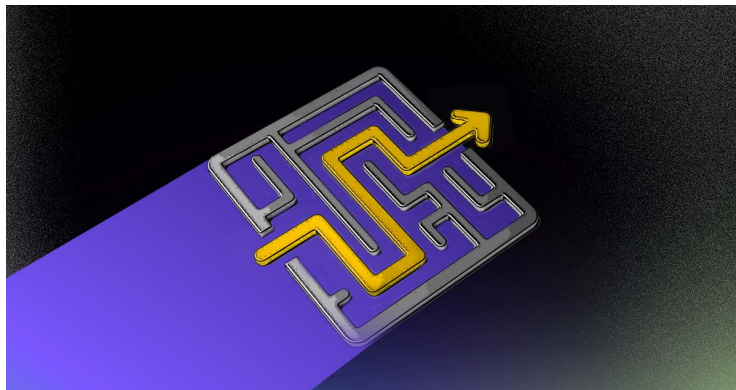
Principles of Platform Engineering

To make it work



Paving golden paths

Platform engineering is about binding process and tools into a paved road. Rather than letting everybody operate everything and having to understand the entire toolchain to do so, platform engineers provide the glue to bind everything into a consistent self-service experience.



Clear mission and role

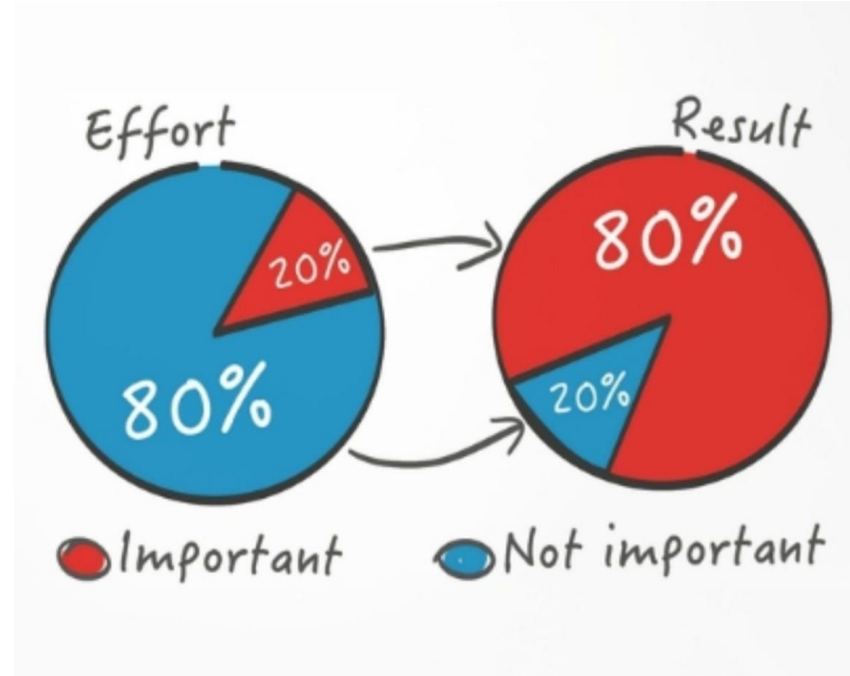


Platform as a Product

Work Types

Type	Output	Planning	Goal	Approach
Manufacturing			<ul style="list-style-type: none">• Maximise efficiency• Commodification	<ul style="list-style-type: none">• Mass production• Precise Specifications• Control Variation
Construction			<ul style="list-style-type: none">• Compromise between cost, time, scope and quality.	<ul style="list-style-type: none">• Plan & Execute• Comprehensive Specifications• Control Change
Product Development			<ul style="list-style-type: none">• Maximise quality and features• Discard low value work	<ul style="list-style-type: none">• Iterative experimentation• Respond to feedback

Focus on common problems



Glue is valuable



Don't reinvent the wheel





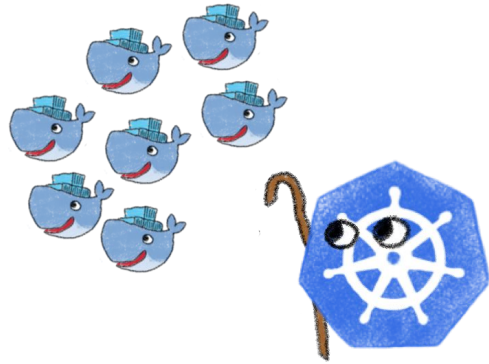
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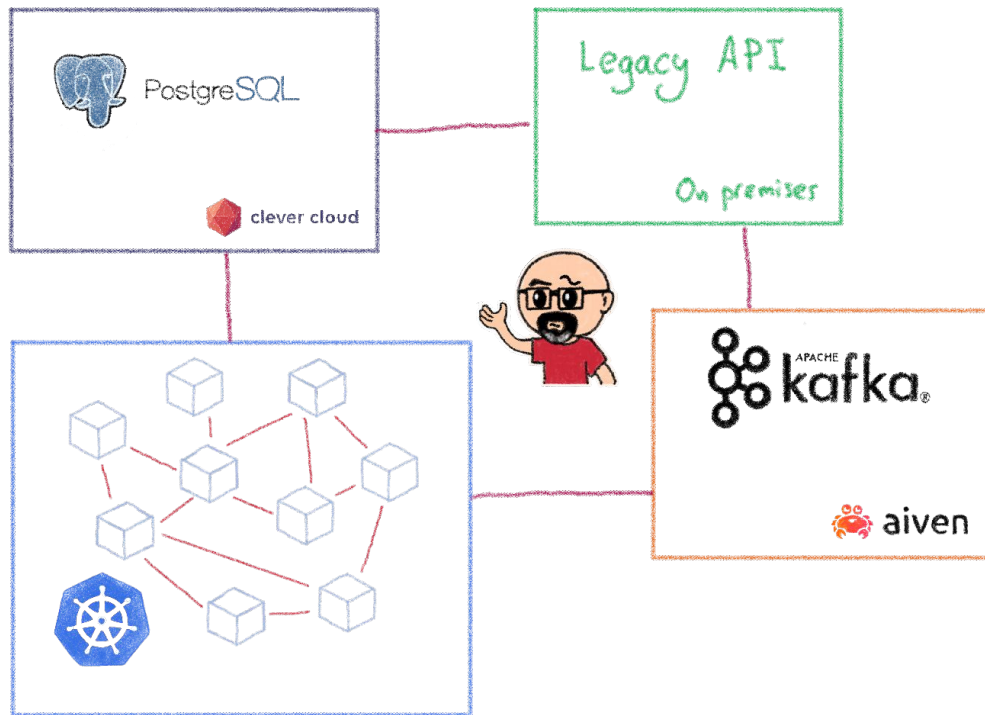
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An IDP over Kubernetes

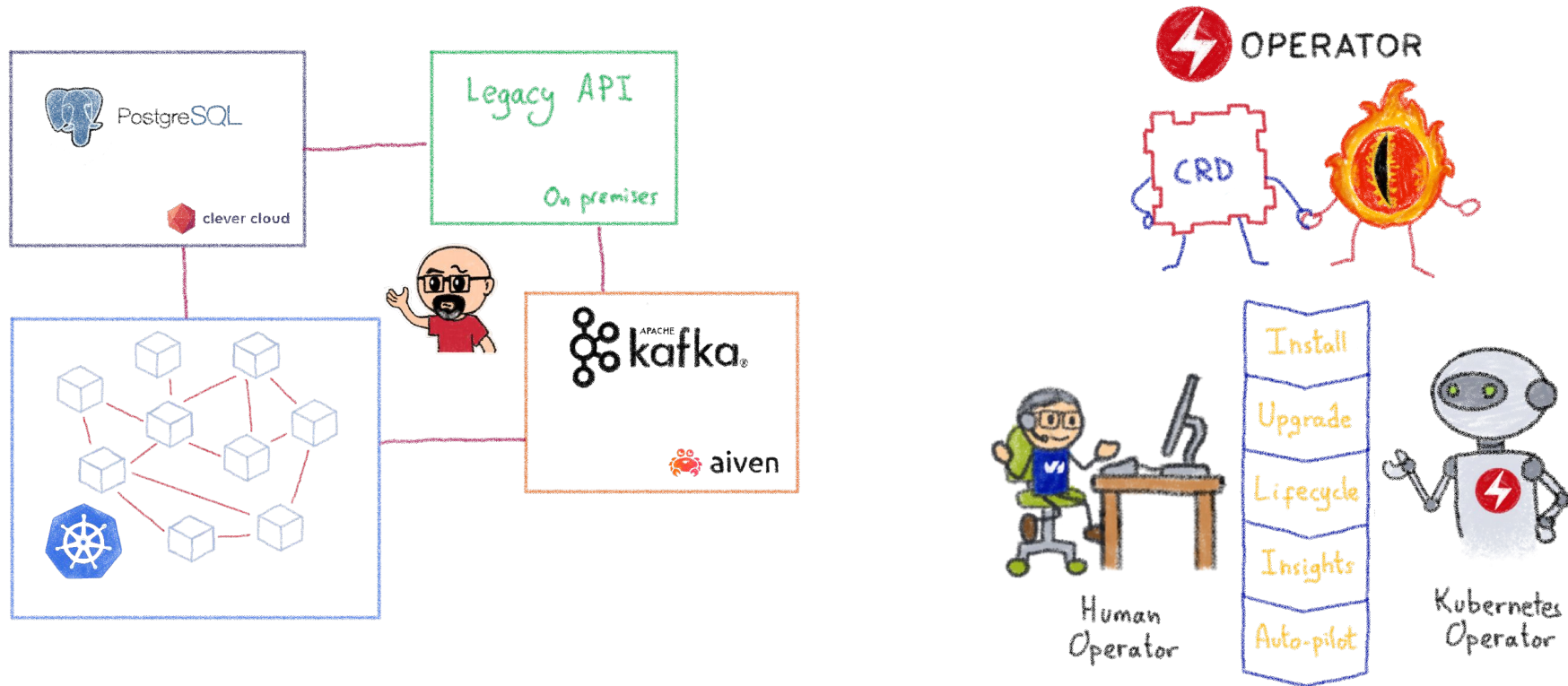
What could I use?



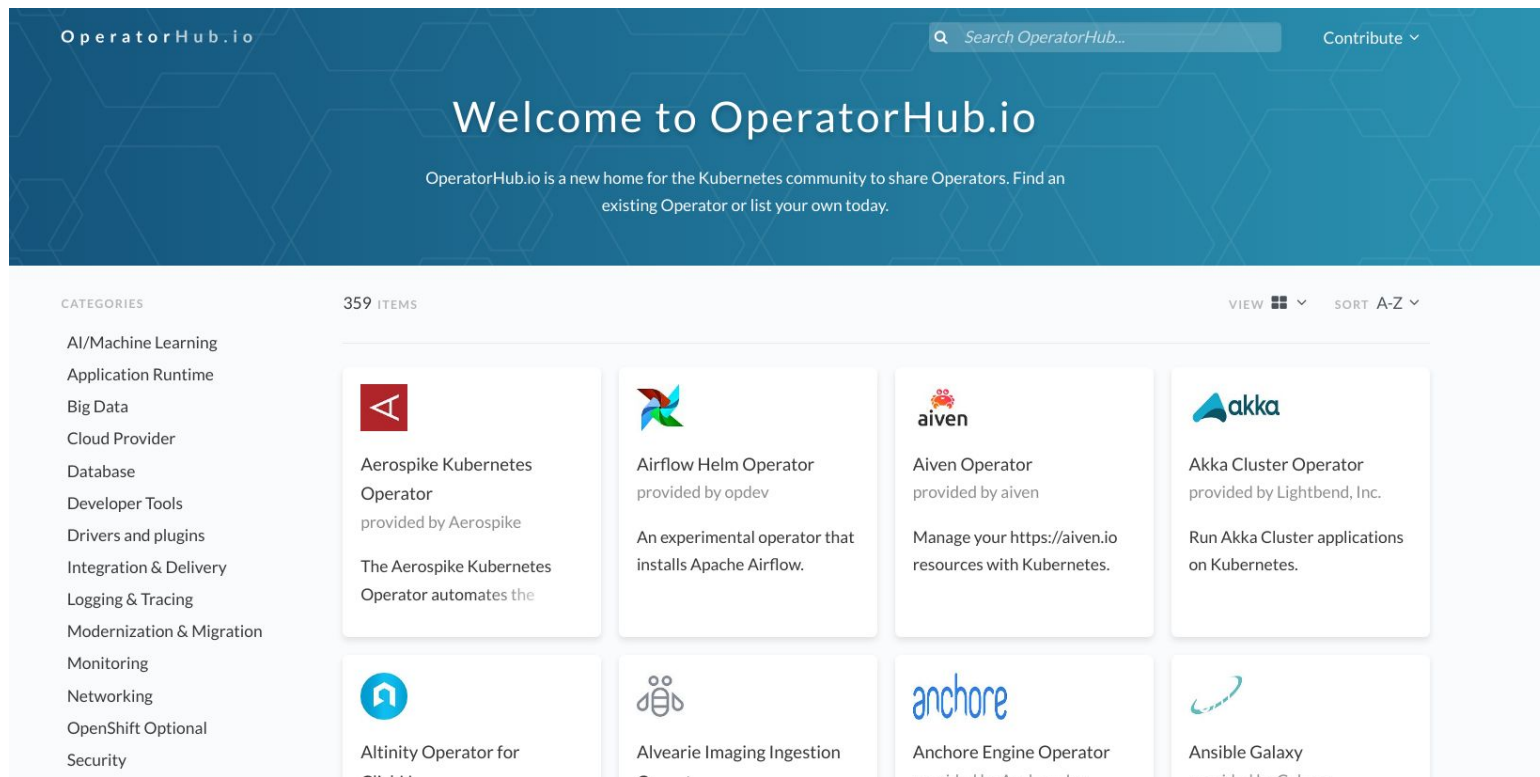
Don't put everything into Kubernetes



Operators simplify Kubernetes integration



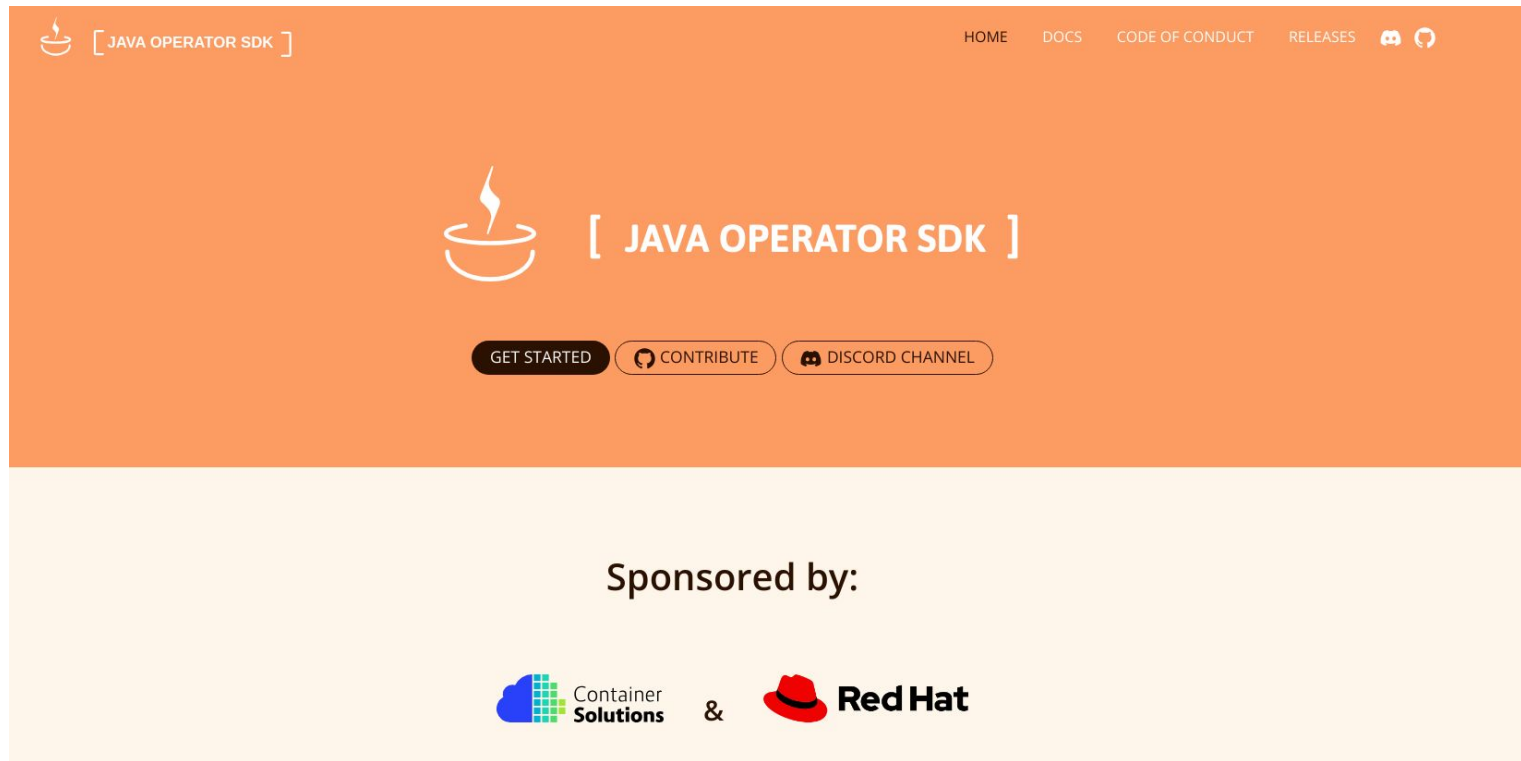
Lots of available operators



The screenshot shows the OperatorHub.io website. The header is dark blue with the OperatorHub.io logo on the left, a search bar in the center, and a 'Contribute' link on the right. Below the header, a large blue banner reads 'Welcome to OperatorHub.io' and 'OperatorHub.io is a new home for the Kubernetes community to share Operators. Find an existing Operator or list your own today.' Below the banner, there's a section for 'CATEGORIES' on the left and '359 ITEMS' in the center. The categories listed are: AI/Machine Learning, Application Runtime, Big Data, Cloud Provider, Database, Developer Tools, Drivers and plugins, Integration & Delivery, Logging & Tracing, Modernization & Migration, Monitoring, Networking, OpenShift Optional, and Security. The main content area displays a grid of operator cards. Each card includes an icon, the operator name, the provider, and a brief description.

Operator	Provider	Description
Aerospike Kubernetes Operator	Aerospike	The Aerospike Kubernetes Operator automates the
Airflow Helm Operator	opdev	An experimental operator that installs Apache Airflow.
Aiven Operator	aiven	Manage your https://aiven.io resources with Kubernetes.
Akka Cluster Operator	Lightbend, Inc.	Run Akka Cluster applications on Kubernetes.
Altinity Operator for	Altinity	
Alvearie Imaging Ingestion	Alvearie	
Anchore Engine Operator	Anchore	
Ansible Galaxy	Ansible	

Hey Devovxians, operators ❤️ Java



The screenshot shows the homepage of the Java Operator SDK. The top navigation bar includes links for HOME, DOCS, CODE OF CONDUCT, and RELEASES, along with icons for Discord and GitHub. The main header features the Java logo and the text [JAVA OPERATOR SDK]. Below this, there are three buttons: GET STARTED, CONTRIBUTE (with a GitHub icon), and DISCORD CHANNEL (with a Discord icon). The bottom section is titled 'Sponsored by:' and displays logos for Container Solutions and Red Hat.

[JAVA OPERATOR SDK]

HOME DOCS CODE OF CONDUCT RELEASES



















































[JAVA OPERATOR SDK]

GET STARTED CONTRIBUTE DISCORD CHANNEL

Sponsored by:

Container Solutions & Red Hat

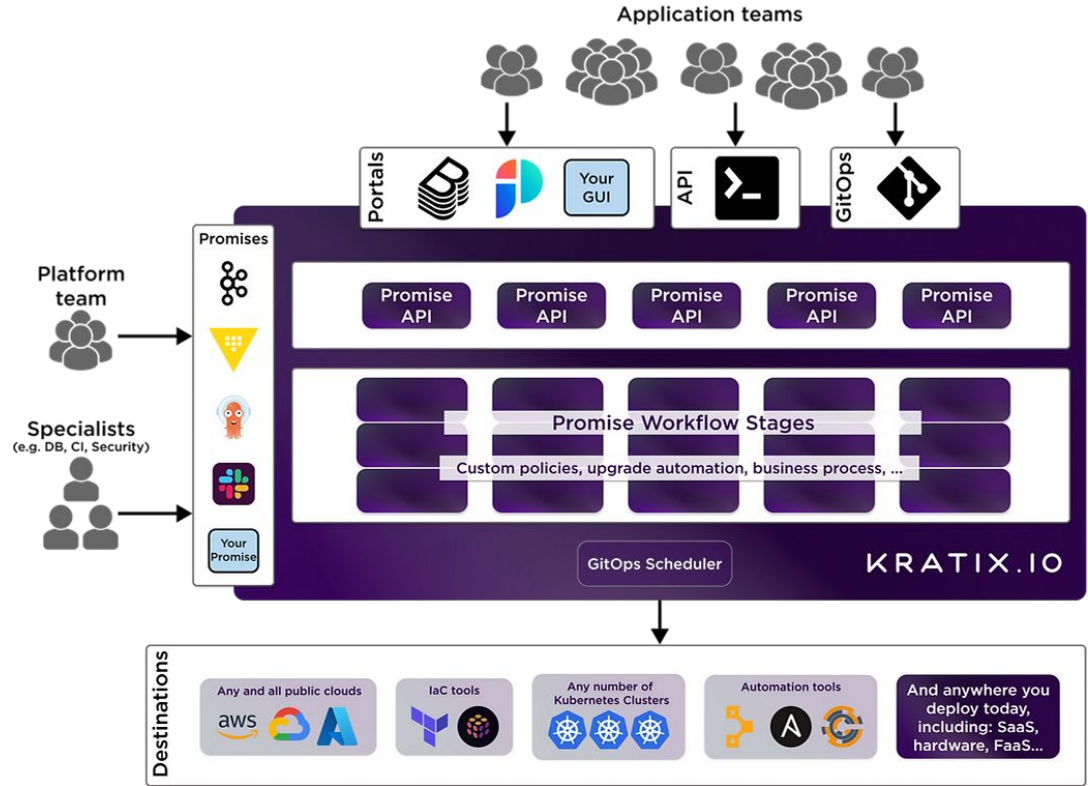
So you have a bunch of operators...

 Aerospike Kubernetes Operator provided by Aerospike The Aerospike Kubernetes Operator automates the	 Airflow Helm Operator provided by apache An experimental operator that installs Apache Airflow.	 Aliven Operator provided by aliven Manage your https://aliven.io resources with Kubernetes.	 Akka Cluster Operator provided by Lightbend, Inc. Run Akka Cluster applications on Kubernetes.	 Altinity Operator for ClickHouse provided by Altinity ClickHouse Operator manages full lifecycle of ClickHouse.	 Dapr Control Plane Operator provided by dapr.io Dapr Control Plane Operator	 Datastax Operator provided by Datastax Datastax provides a modern monitoring and analytics platform. Gather metrics.	 DataStax Kubernetes Operator for Apache Cassandra provided by DataStax Simple provisioning, simple	 DataTruckerIO provided by DataTruckerIO	 Debezium Operator provided by Debezium Authors An Operator for installing and managing Debezium
 Alibaba Imaging Ingestion Operator provided by Alibaba The Alibaba Imaging Ingestion provides a collection of	 Anchore Engine Operator provided by Anchore Inc. Anchore Engine - container image scanning service for policy-based security.	 Ansible Galaxy provided by Galaxy Community Ansible Galaxy is Ansible's official hub for sharing	 Apache Spark Operator provided by ramanathan An operator for managing the Apache Spark clusters and intelligent applications.	 API Operator for Kubernetes provided by WSO2 API Operator provides a fully automated experience for	 Dell Container Storage Modules provided by Dell Technologies Easily install and manage Dell's CSI Drivers and CSI.	 Dell CSI Operator provided by Dell Technologies	 Deployment Validation Operator provided by Red Hat The deployment validation operator	 Devfile Registry Operator provided by Red Hat Deploy and manage Devfile Registries on Kubernetes and OpenShift with the Devfile	 dnext-operator provided by dnext dnext-operator
 API Testing provided by Insomnium API Testing Operator provides a fully automated experience for API Testing applications.	 APiCent provided by Red Hat APiCent is an API gateway built on top of NGINX. It is part of the Red Hat SSO4.0 API	 Apicurio Registry Operator provided by Apicurio Deploy and manage Apicurio Registry on Kubernetes.	 APIMatic Operator provided by APIMatic Generate client SDKs and Interactive Documentation for your APIs in minutes.	 AppDirector provided by Randell Enable Developer Self-Service to Setup and Manage Applications on Multiple	 DNS Operator provided by Red Hat A Kubernetes Operator to manage the lifecycle of DNS resources.	 druid-operator provided by Apache Druid Community druid-operator allows creating Apache Druid cluster.	 DynaTrace OneAgent provided by Dynatrace LLC	 DynaTrace Operator provided by Dynatrace LLC	 Eclipse Ditto provided by Jens Remann Eclipse Ditto provides a Digital Twin platform. A digital twin is a virtual, cloud-based
 AppDynamics Operator for Kubernetes provided by AppDynamics LLC AppDynamics Operator to install AppDynamics	 Application Services Metering Operator provided by Red Hat Collect the core usage of products from the Application	 Appravis CPS Operator provided by Appravis, Inc. The Appravis CPS operator enables you to back up and restore your	 Aqua Security Operator provided by Aqua Security, Inc. The Aqua Security Operator runs within a OpenShift cluster and provides a means to	 ArangoDB provided by ArangoDB GmbH ArangoDB Kubernetes Operator	 Eclipse Hawkbit provided by Jens Reimann Eclipse hawkbit is a firmware update platform.	 ECR Secret Operator provided by MOSES	 EDB Postgres for Kubernetes provided by EnterpriseDB Corporation Operator to manage Postgres	 EDB Keycloak Operator provided by EDB Delivery Platform An Operator for managing Keycloak	 EDP Nexus Operator provided by EDB Delivery Platform An Operator for managing Nexus entities.
 Argo CD provided by Argo CD Community Argo CD is a declarative, GitOps continuous delivery	 Argo CD Operator (Helm) provided by OpenShift Zone Declarative Continuous Delivery following GitOps.	 Astra Trident provided by NetApp, Inc. Trident Operator, to manage Astra Trident installations	 AtlasMap Operator provided by AtlasMap AtlasMap is a data mapping solution with an interactive web-based user interface.	 Authentia Operator provided by Red Hat	 EDP Sensor Operator provided by EPM Delivery Platform An Operator for managing Sensor entities.	 eG Innovations Universal Agent Operator provided by eG Innovations	 Elasticsearch (ECK) Operator provided by Elastic Run Elasticsearch, Kibana, APIM Server, Beats, etc.	 Elasticsearch Index Operator provided by IBM An operator for managing indices on elasticsearch	 Elasticsearch Phoenix Operator provided by Carrooft Manage elasticsearch indices, templates lifecycle

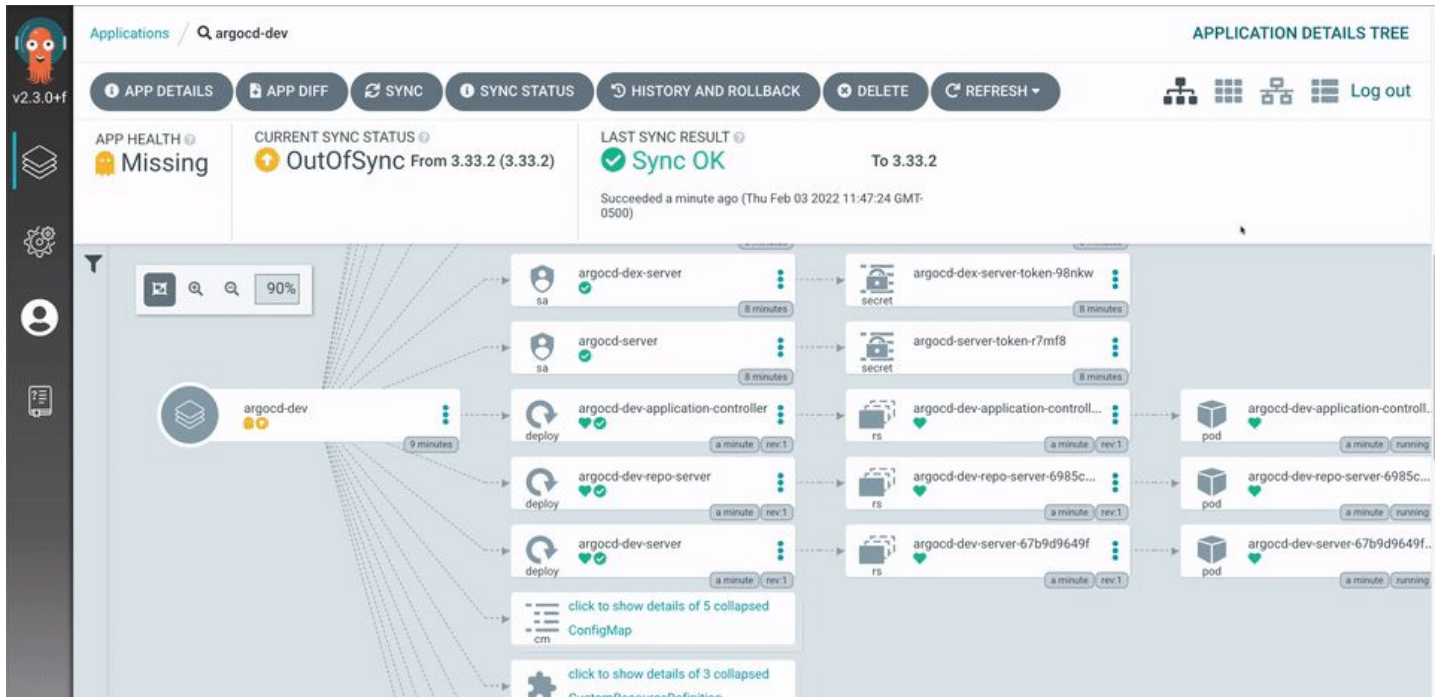


Too many options again...

Use a Platform Engineering framework

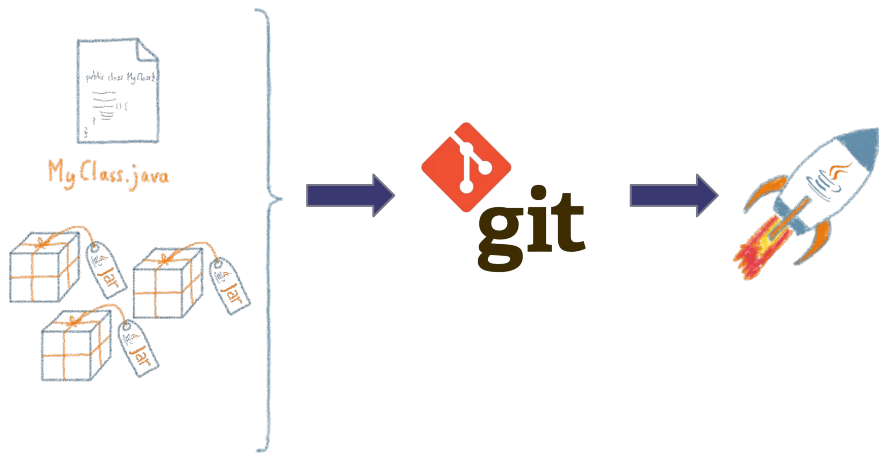


Set-up a robust CI/CD/GitOps pipeline

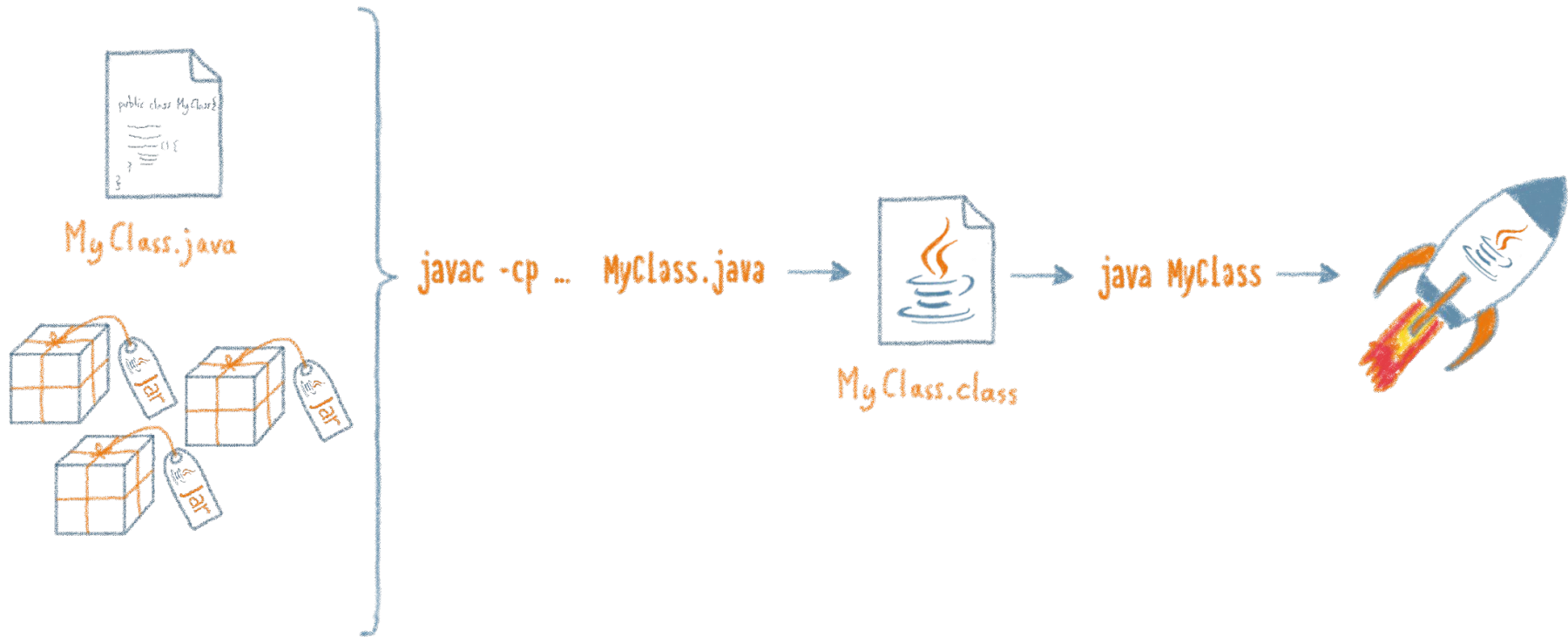


An IDP without Kubernetes

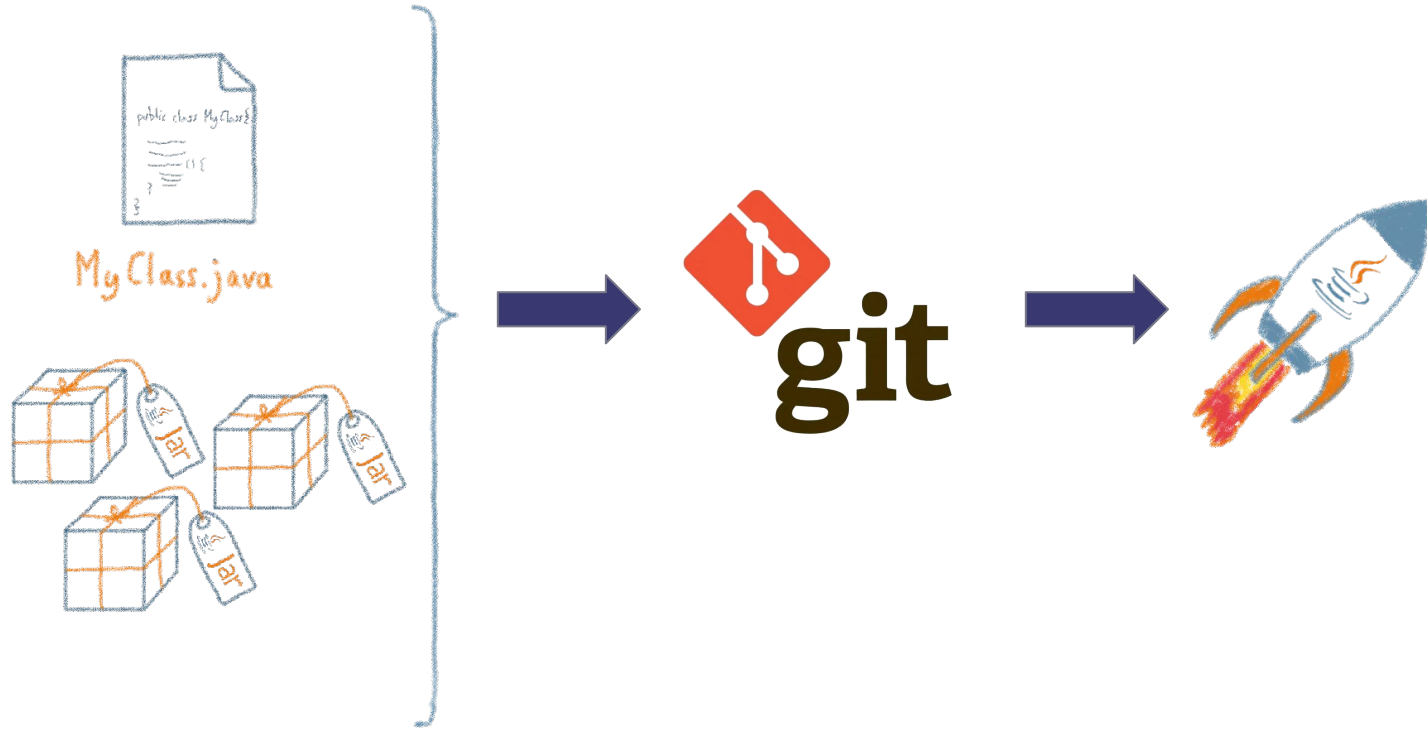
There is a life outside K8s...



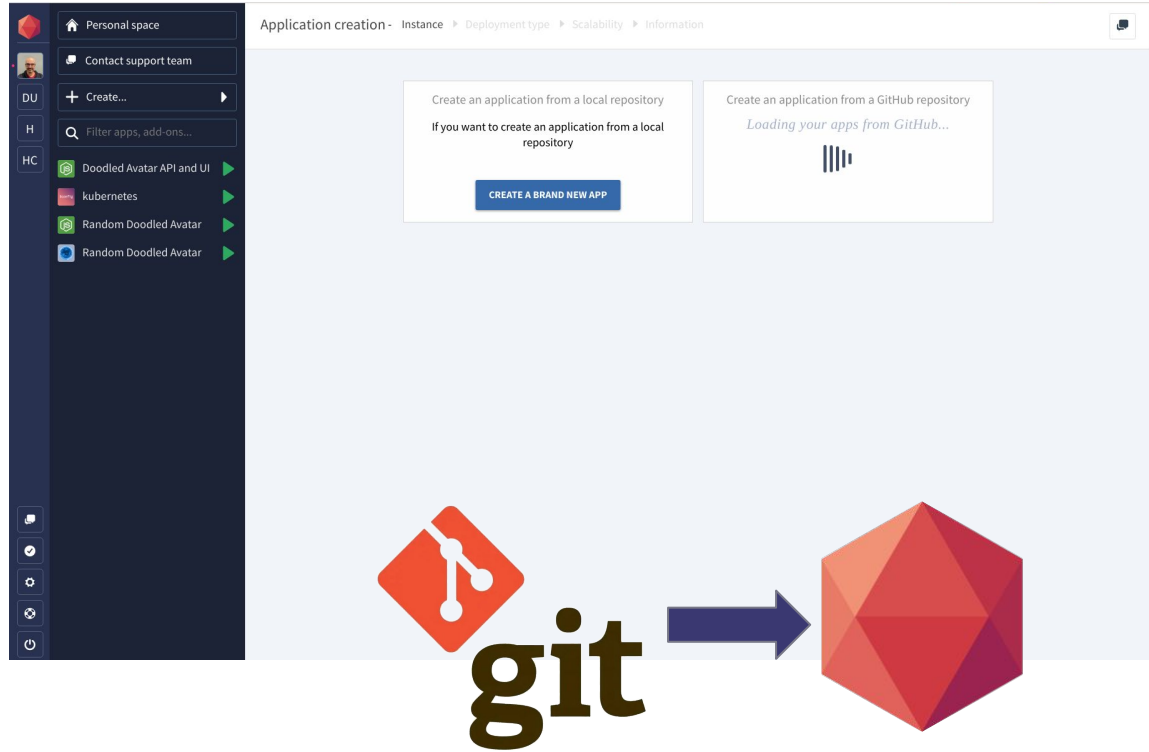
What if developers only developed?



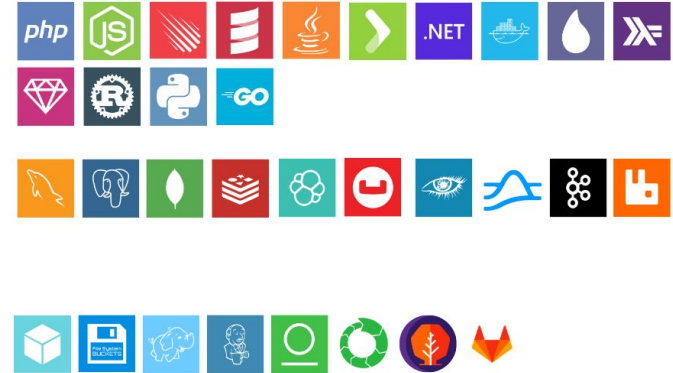
PaaS as cornerstone of a dev-centered IDP



Clever Cloud



clever cloud



Some Links to go further

- [There Is No Such Thing as a DevOps Engineer](#)
- [DevOps Topologies](#)
- [What is Platform Engineering](#)
- [Team Topologies](#)
- [Kratix](#)
- [Aiven](#)
- [Clever Cloud](#)

