



# {RIVIERADEV}

## Des silos au Platform Engineering en passant par le DevOps

Adopter GitOps et aller au-delà de l'hype



Sébastien Blanc



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Horacio Gonzalez



clever cloud



# Who are we?



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**aiven**



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**clever cloud**

# Adding layers of shiny complexity

Last 30 years in software development



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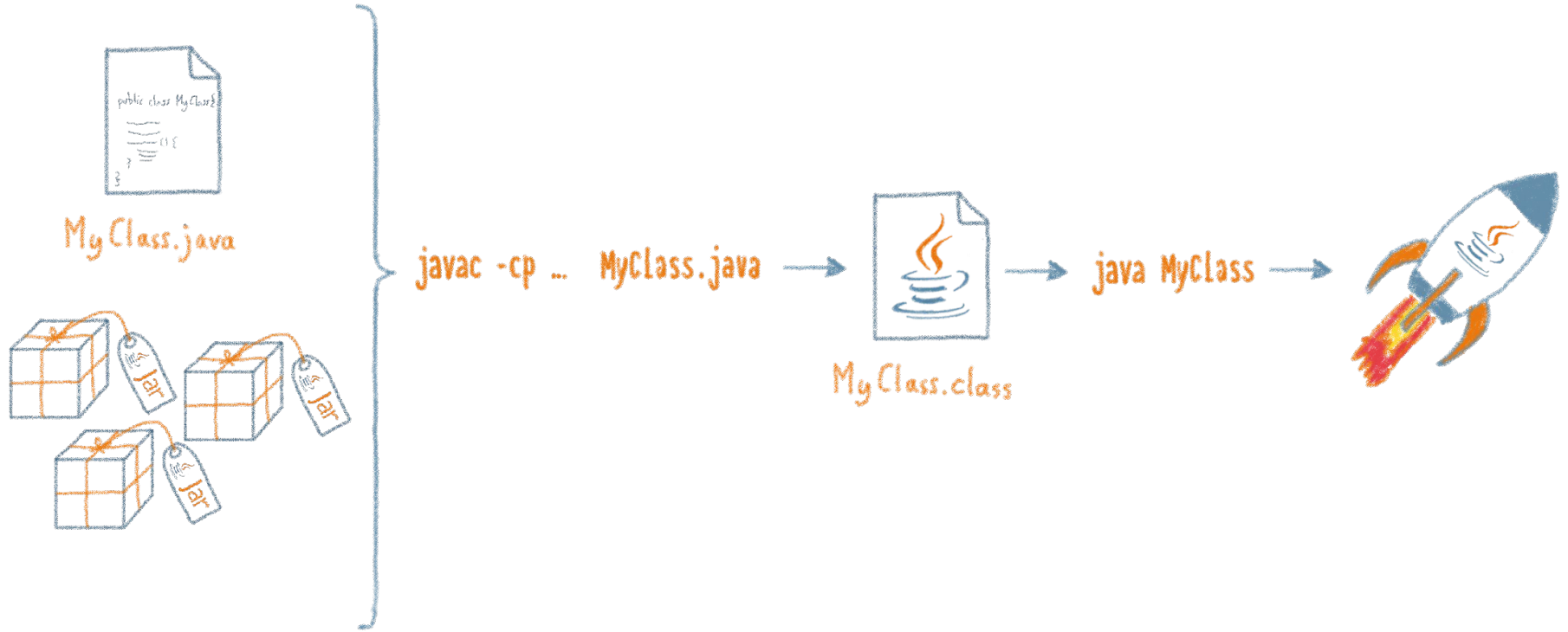


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# From write-compile-exec to Kubernetes



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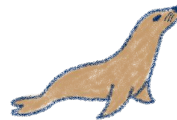
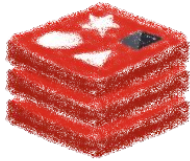
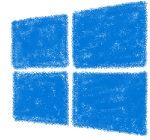
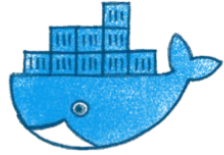


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# From write-compile-exec to Kubernetes



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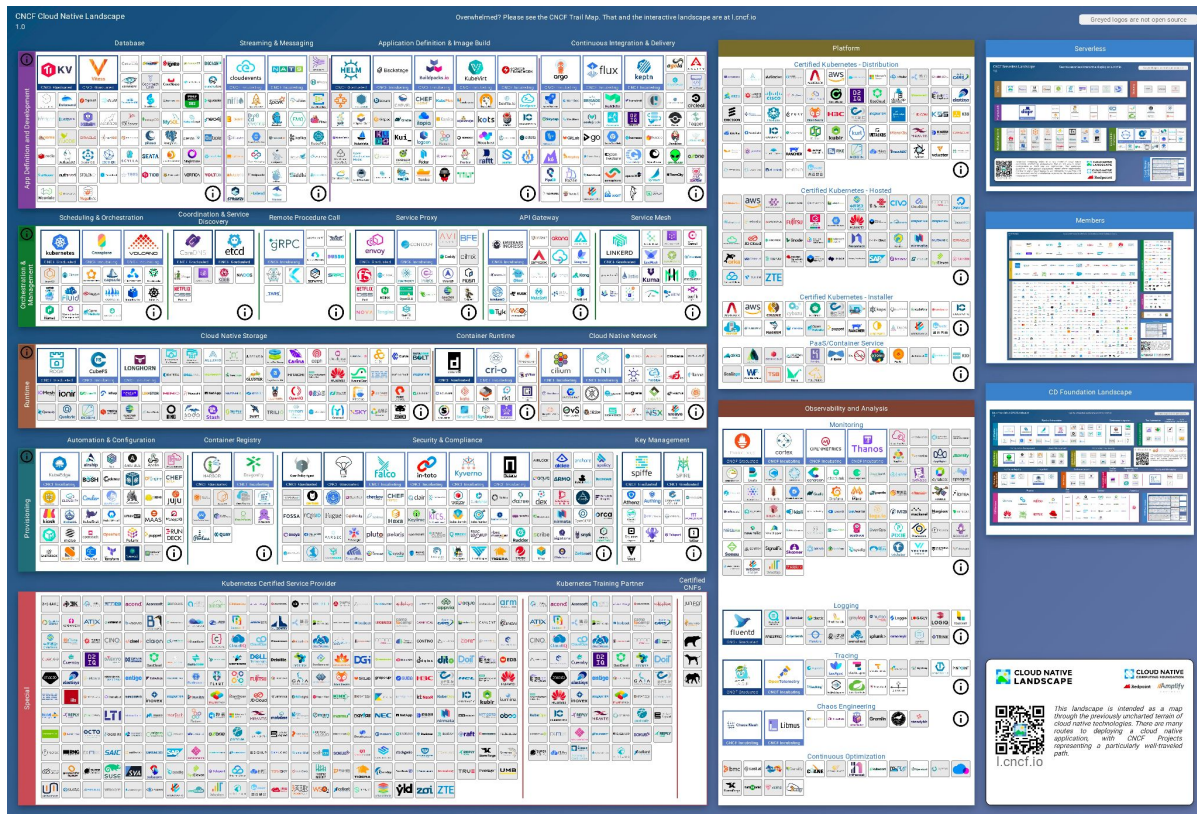


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# If I were a student now, I would feel scared

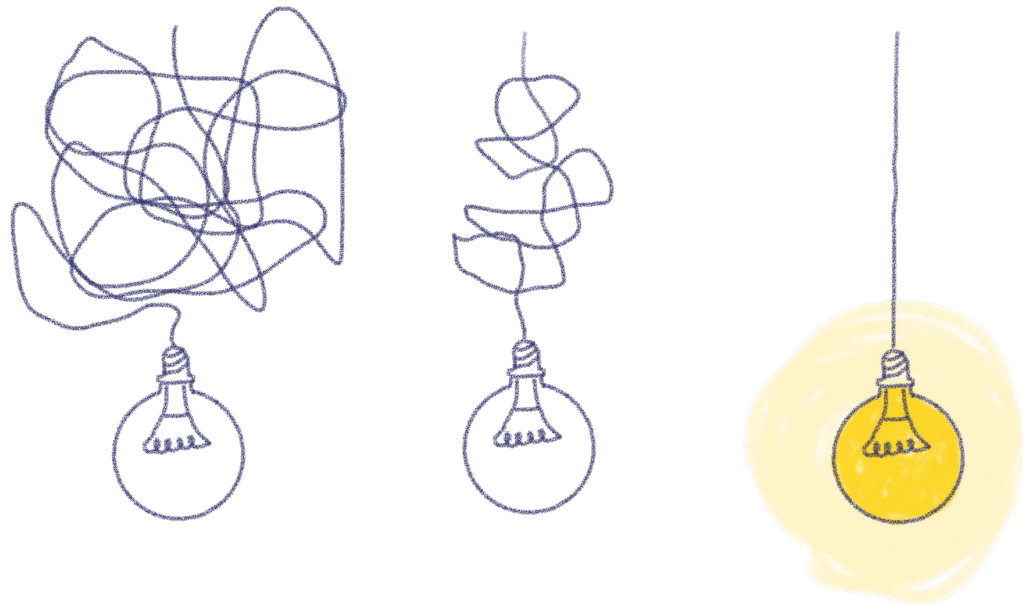


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# Platform Engineering to the rescue



Empowering developers while reducing complexity



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# IT in the 90s

Once upon a time...



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# In a time almost forgotten



When even internet was young...



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# When Windows 95 was the cutting edge



And a 100 Mb disk was huge...



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# Big companies still used mainframes



Bigger, fancier, but still the same old IBM



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# Bare-metal based IT reigned



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



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# Applying the industrial model



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



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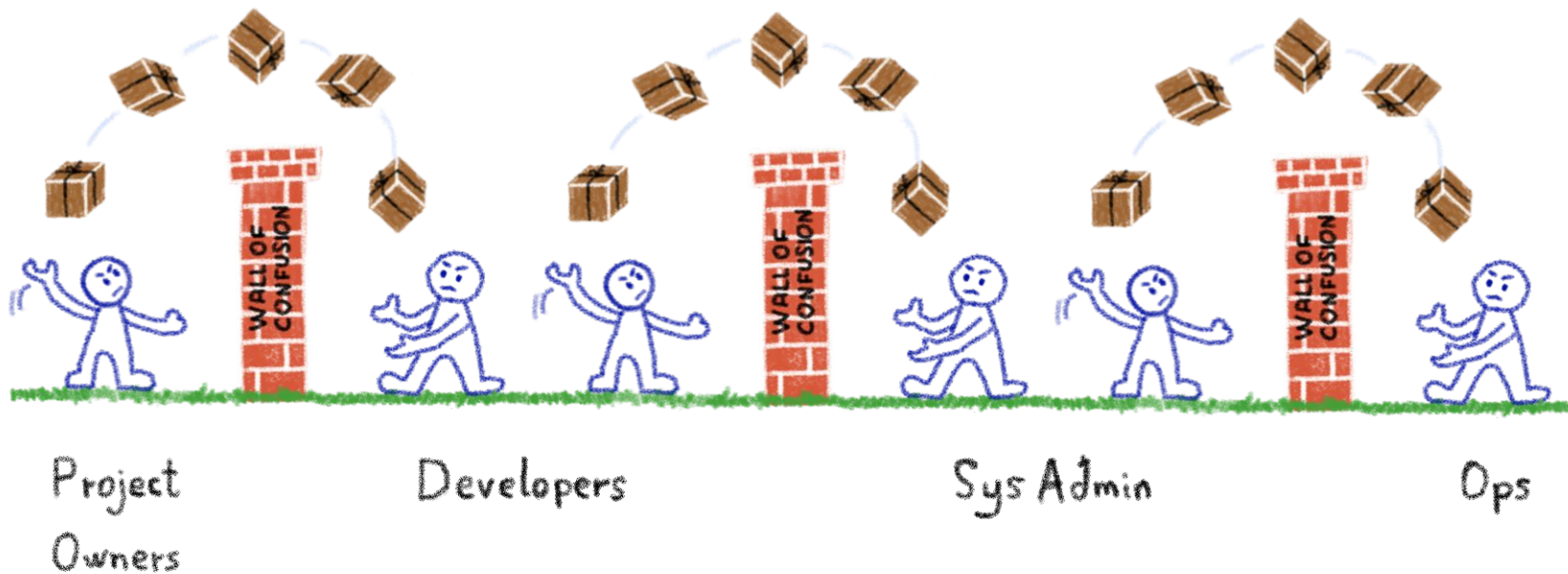


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# Walls & Silos



And procedures, and hierarchy, and corporate politics



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# Why are we managing IT like factories?



Because we didn't know otherwise?



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# Tooling evolves

CVS, Ant and (Leeeroy) Jenkins



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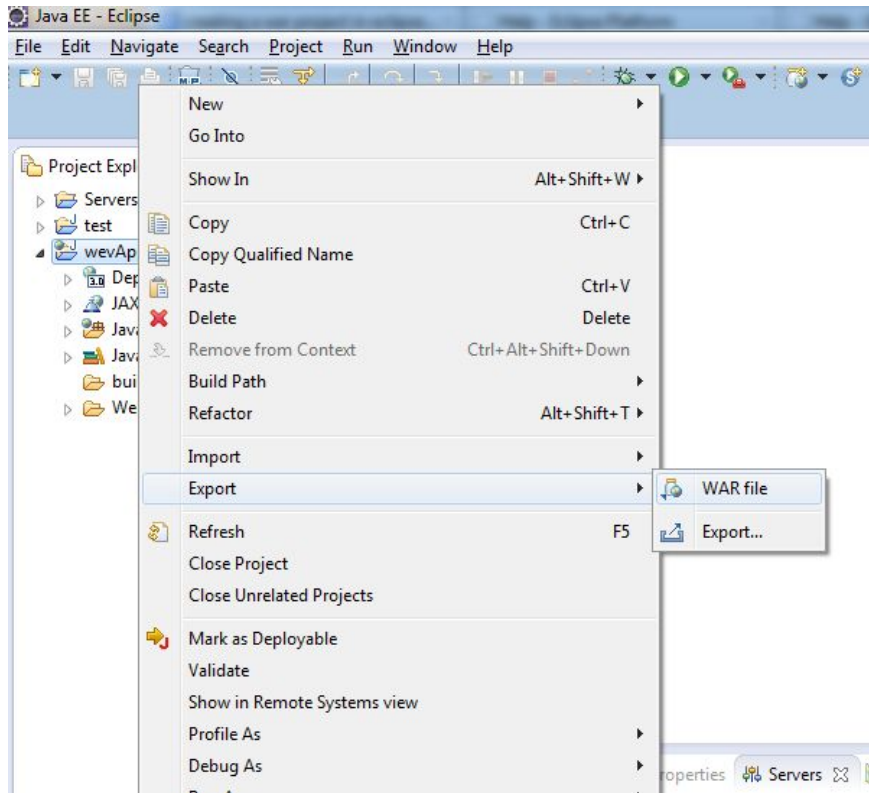


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# Old school procedures



## 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

<a href="#">commons-io-2.13.0-bin.tar.gz</a>	<a href="#">sha512</a>	<a href="#">pgp</a>
<a href="#">commons-io-2.13.0-bin.zip</a>	<a href="#">sha512</a>	<a href="#">pgp</a>

# Tooling empowering changes



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



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# Source control tools



Better than copying and renaming folders...



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# Dependency management & build



The agile dependency manager



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



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# Unit testing and continuous integration



Hudson CI



JUnit



Jenkins

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



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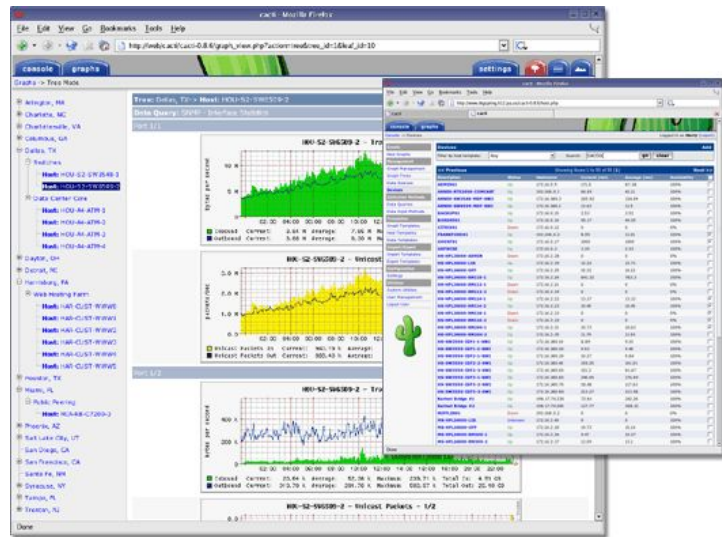
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# Monitoring tools



# Nagios

# ZABBIX



No more spending nights looking at a status screen



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# So many more possibilities...



## So much more complexity!



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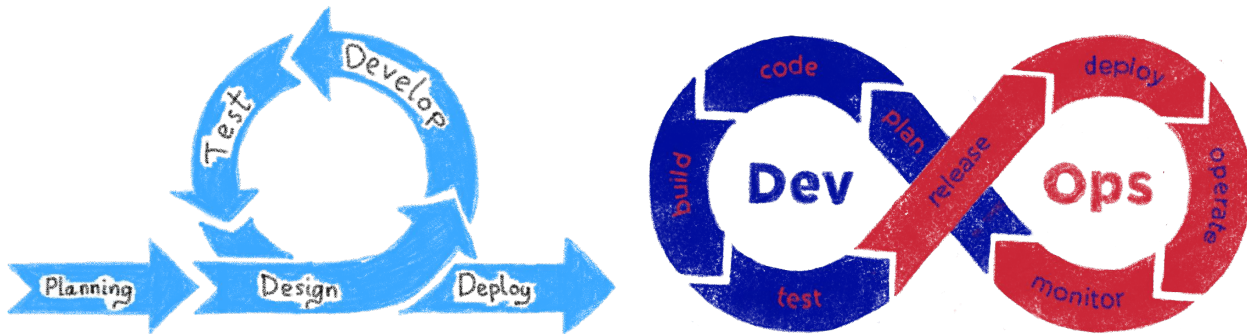
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# XP, agility and DevOps

Buzzwords that changed the IT



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# 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](https://extremeprogramming.org) | [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.



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# Breaching walks, breaking down silos



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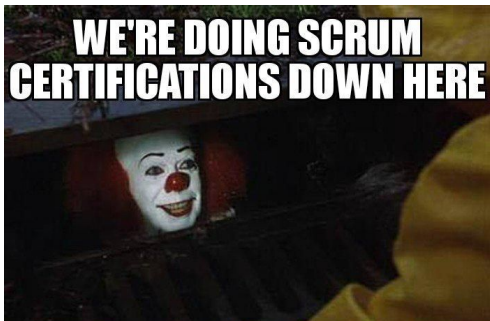


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# The business of Agility



The Dark Side rises



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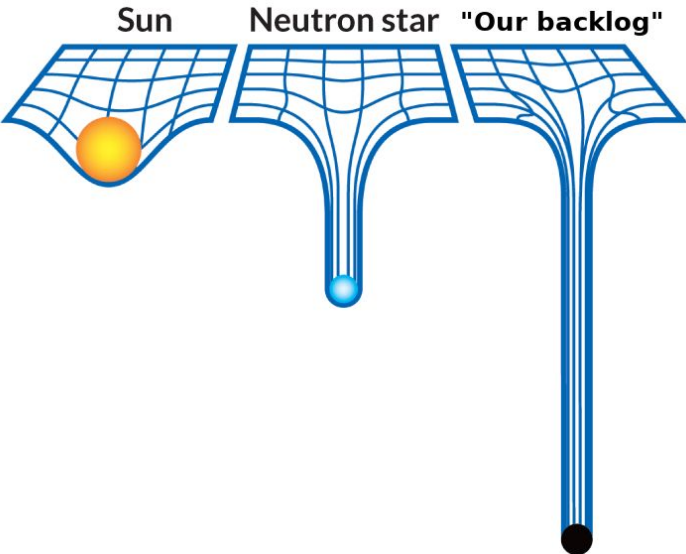


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# Agile Tooling



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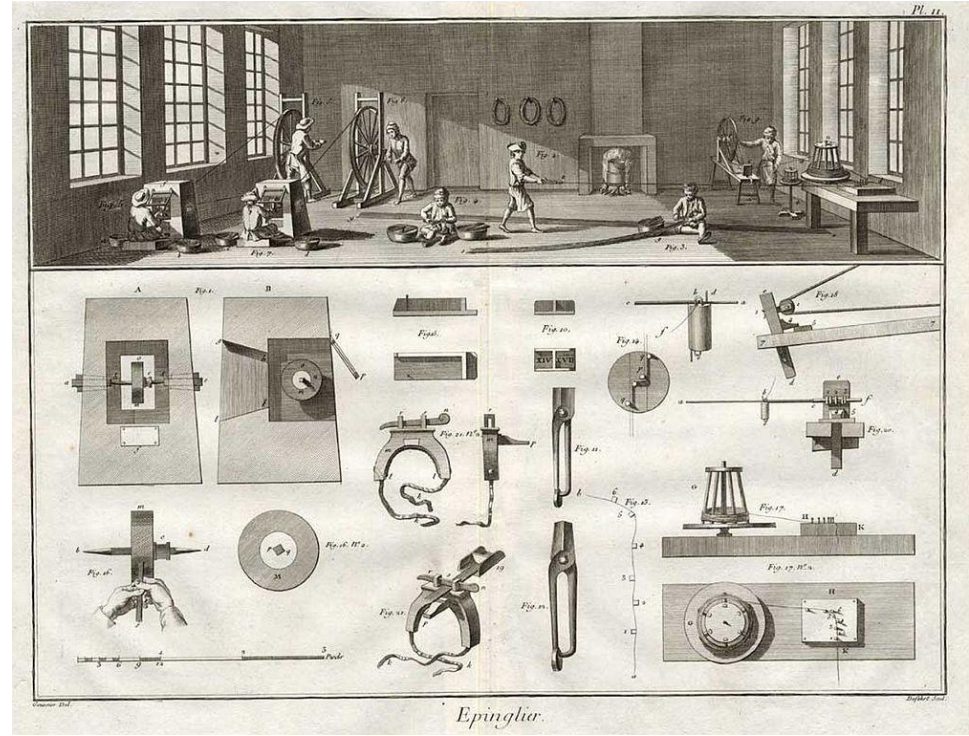


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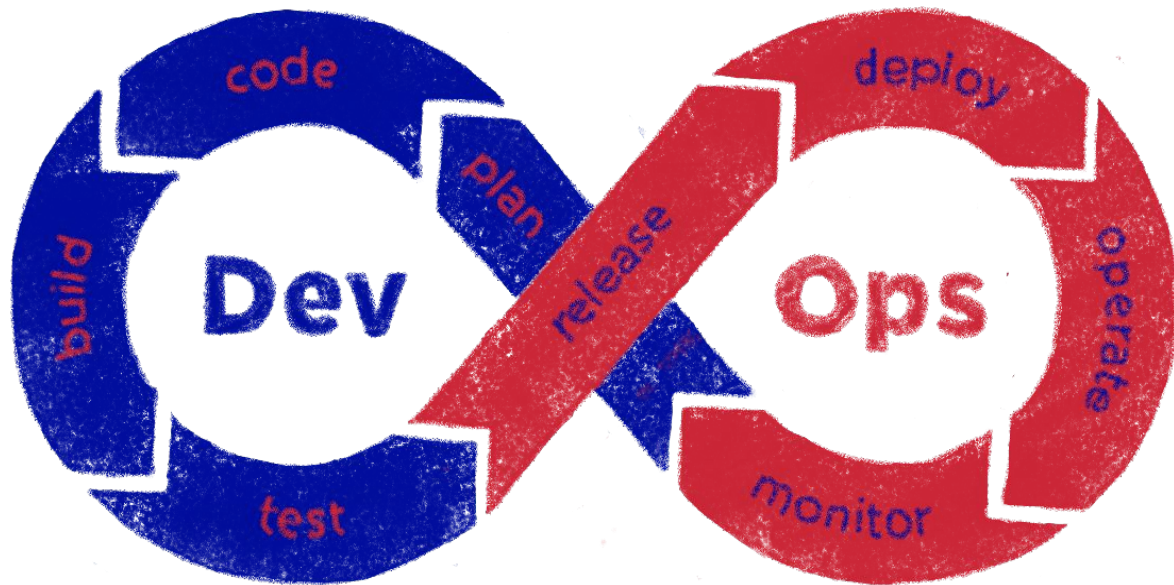


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# Back to industrial practices ?



# DevOps: breaking Dev and Ops Silos



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# DevOps is a reaction to the wall of confusion



Making the different stakeholders  
to work together in sync



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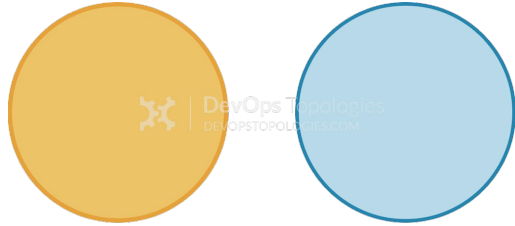


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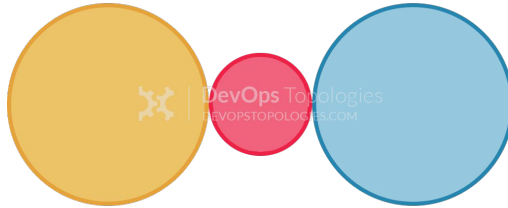
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# DevOps anti patterns



• Dev

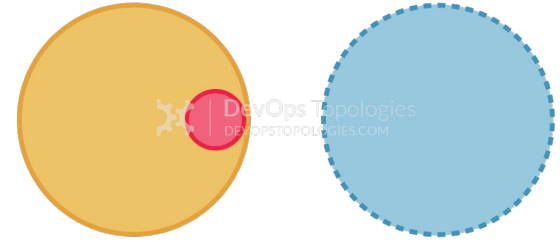
• Ops



• Dev

• DevOps

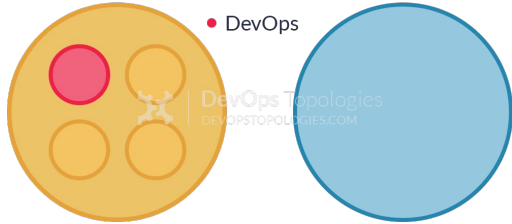
• Ops



• Dev

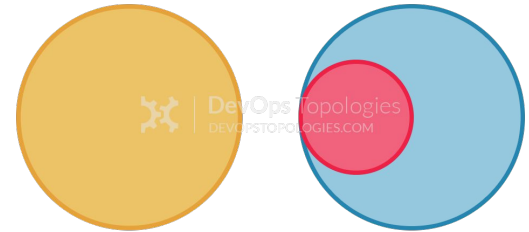
• DevOps

• Ops



• Dev

• Ops



• Dev

• DevOps

• Ops

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



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# 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?



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# So we have Cults of Agility and Dev\*Ops



And so much more complexity!



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# Enter the Cloud

Renting server time in other's people infra



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# From virtualisation to the cloud



How to use the infrastructure at its full capacity



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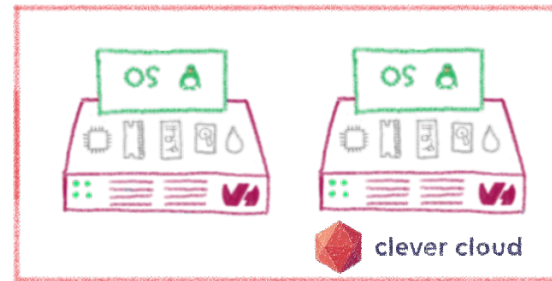
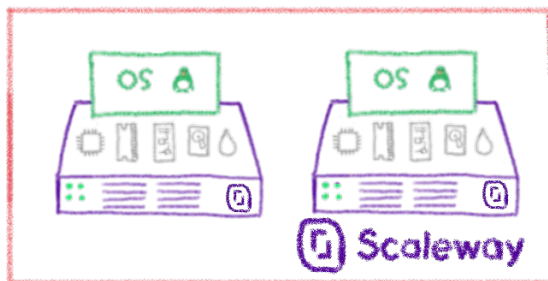
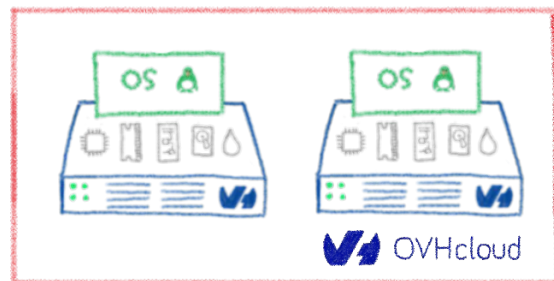
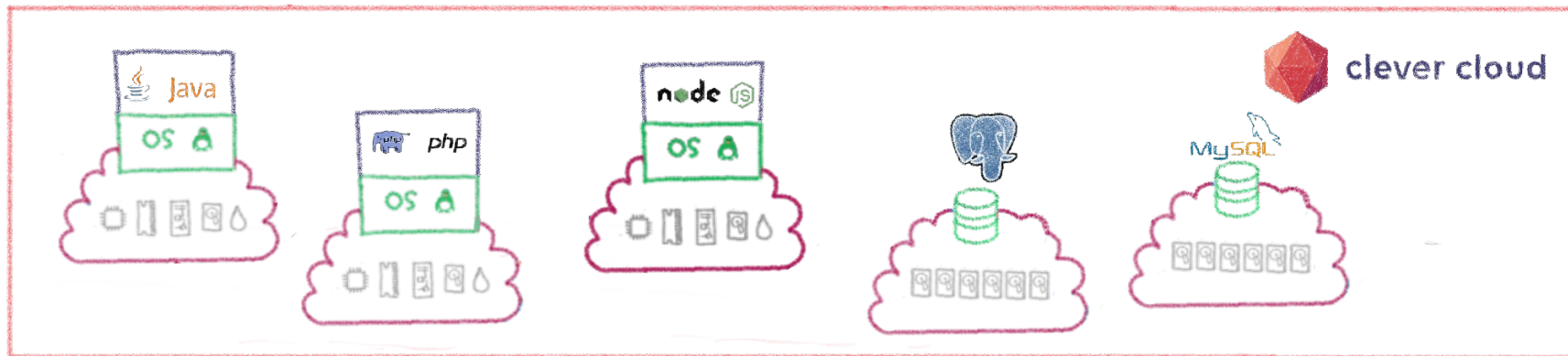


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# Cloud demands automation







Dashboard
Bare Metal Cloud
Hosted Private Cloud
Public Cloud
Web Cloud
Telem
Sunrise
Marketplace

English
Horacio Gonzalo

Instances

### Storage

- Block Storage
- Object Storage
- Cloud Archive
- Gold 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

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)



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# Empowering developers



Infrastructure is only a click away



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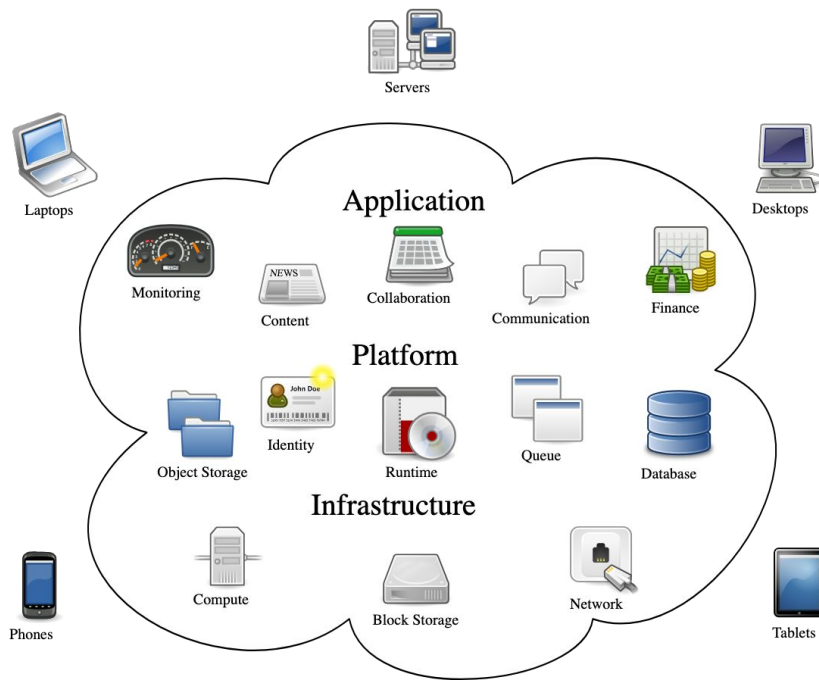


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# Distributed is the new black



## Cloud Native architectures and services



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# Sysadmins who code



Creating tools: automation, monitoring, observability...



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# New roles appear: SRE



WTF is a System Reliability Engineer?



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# 250 cloud products only in this provider...



And so much more complexity!



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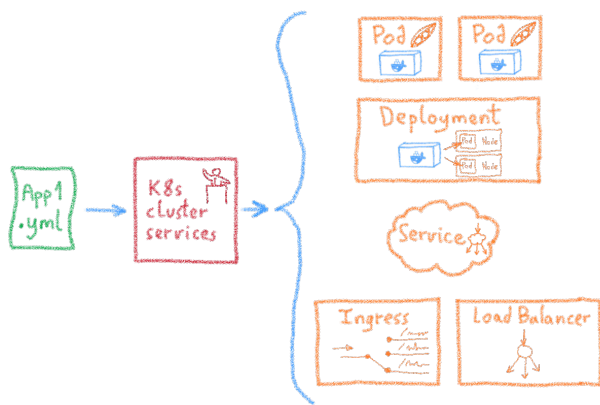
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# Declarative Infrastructure

## The intern metaphor



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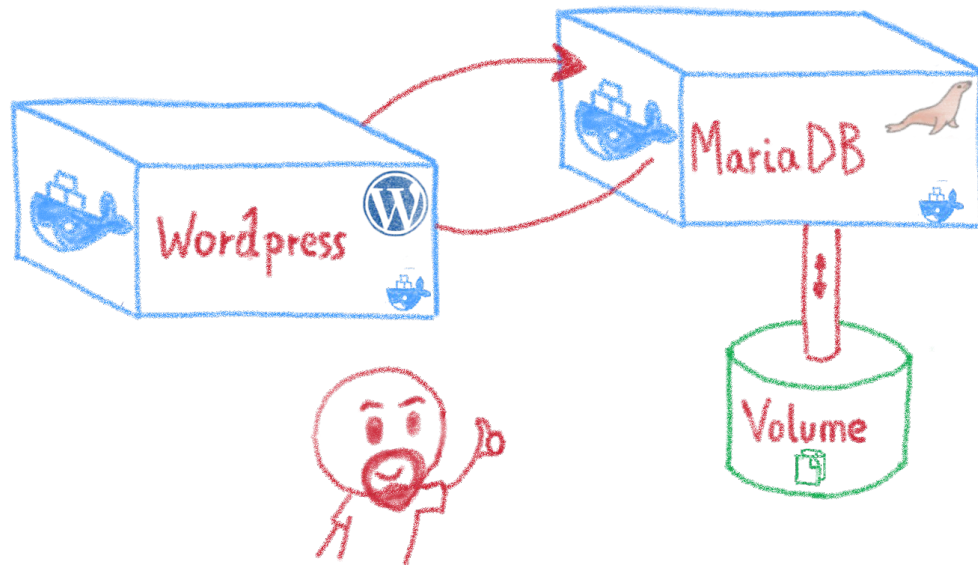
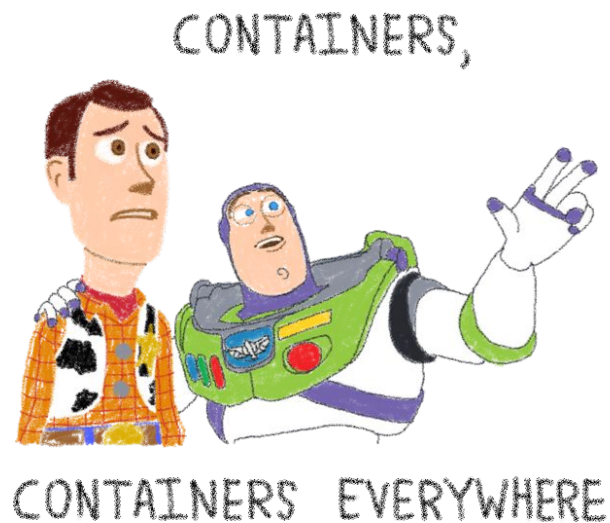


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# Containers make dev life easier



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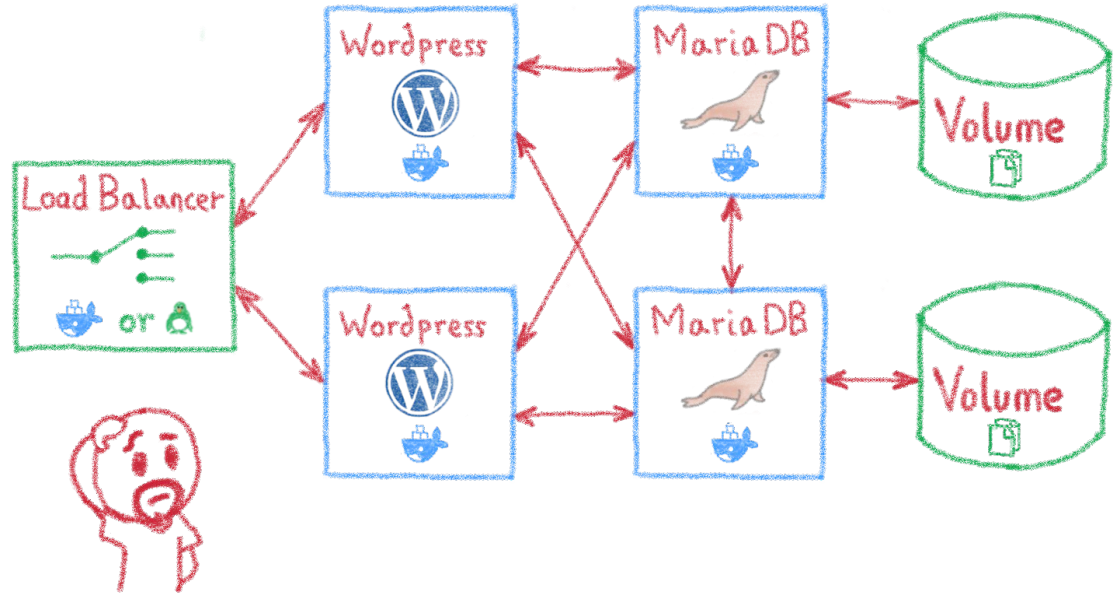
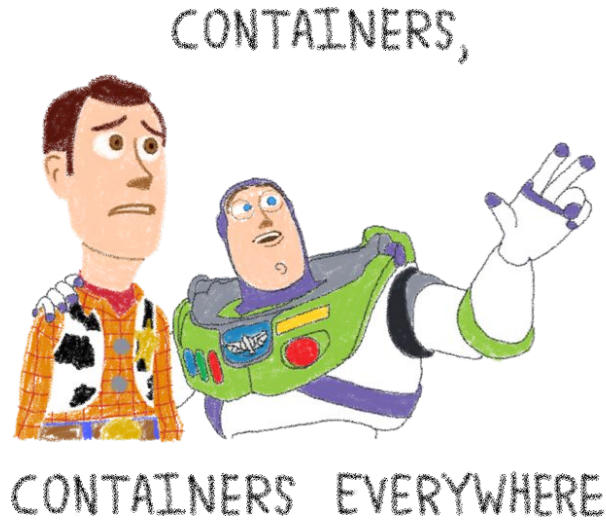


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# Less simple if you must operate them



Like in a production context



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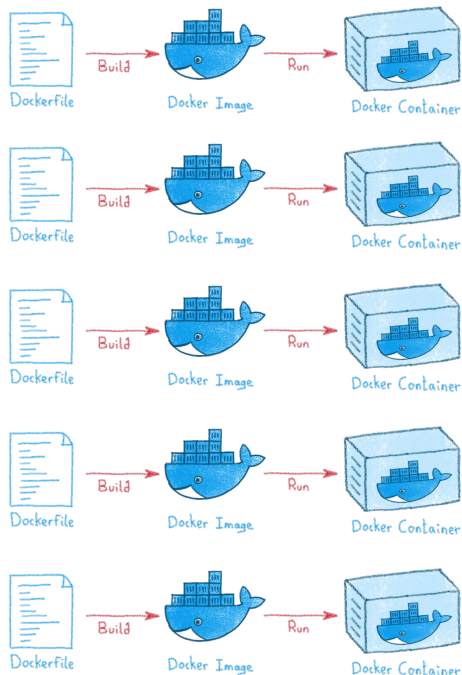


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# And what about microservices?



Are you sure you want to operate them by hand?



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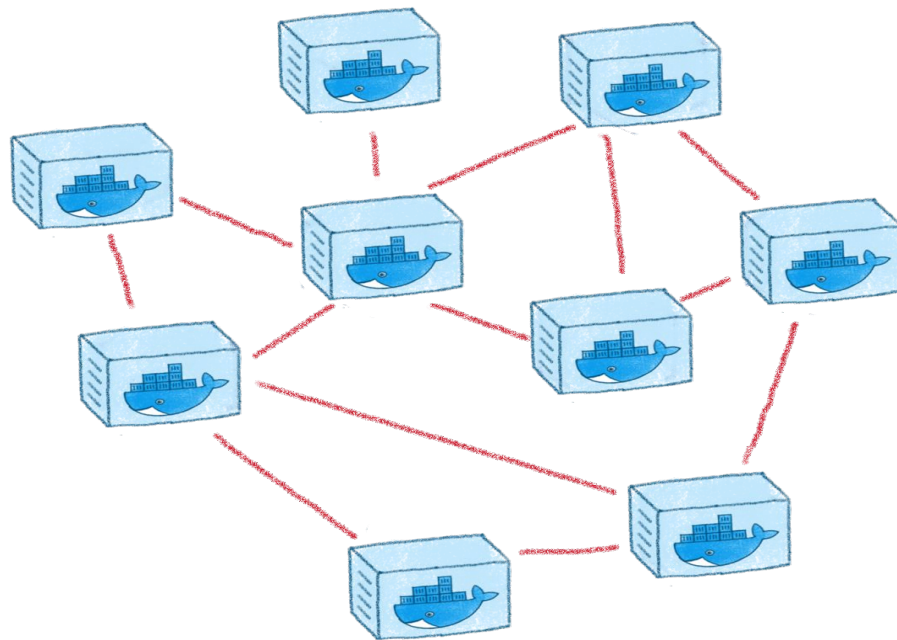
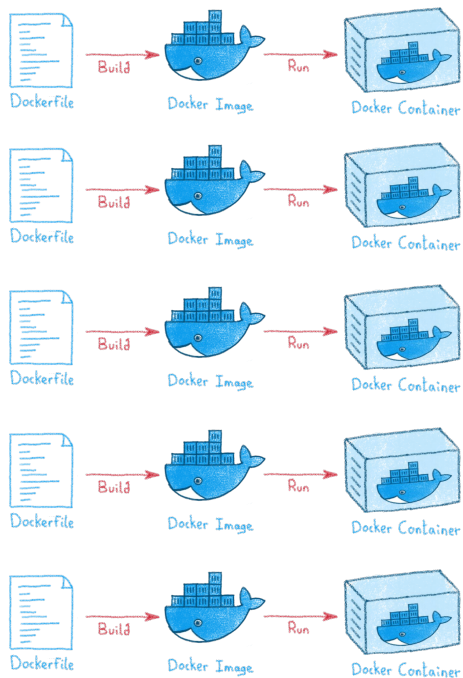


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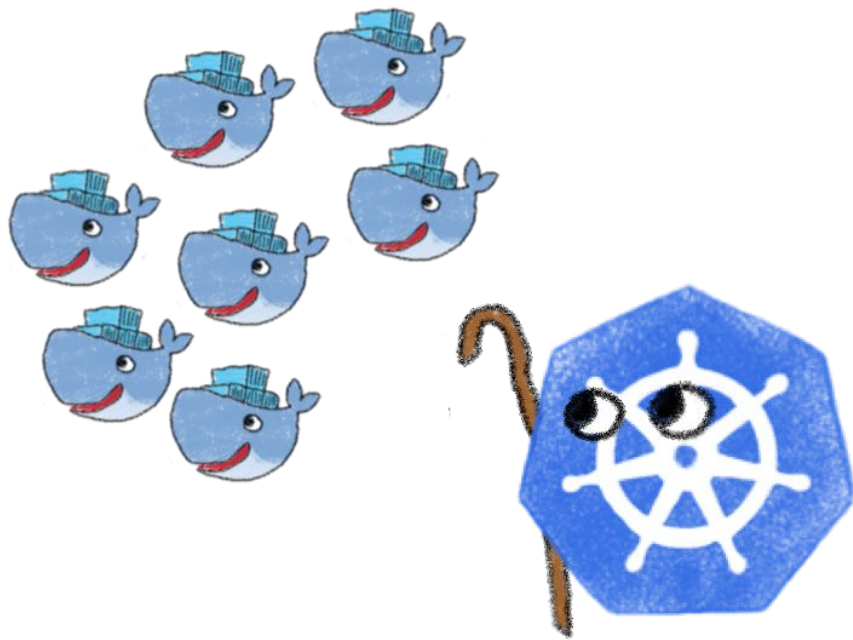


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# Kubernetes: a full orchestrator

Takes care of:

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



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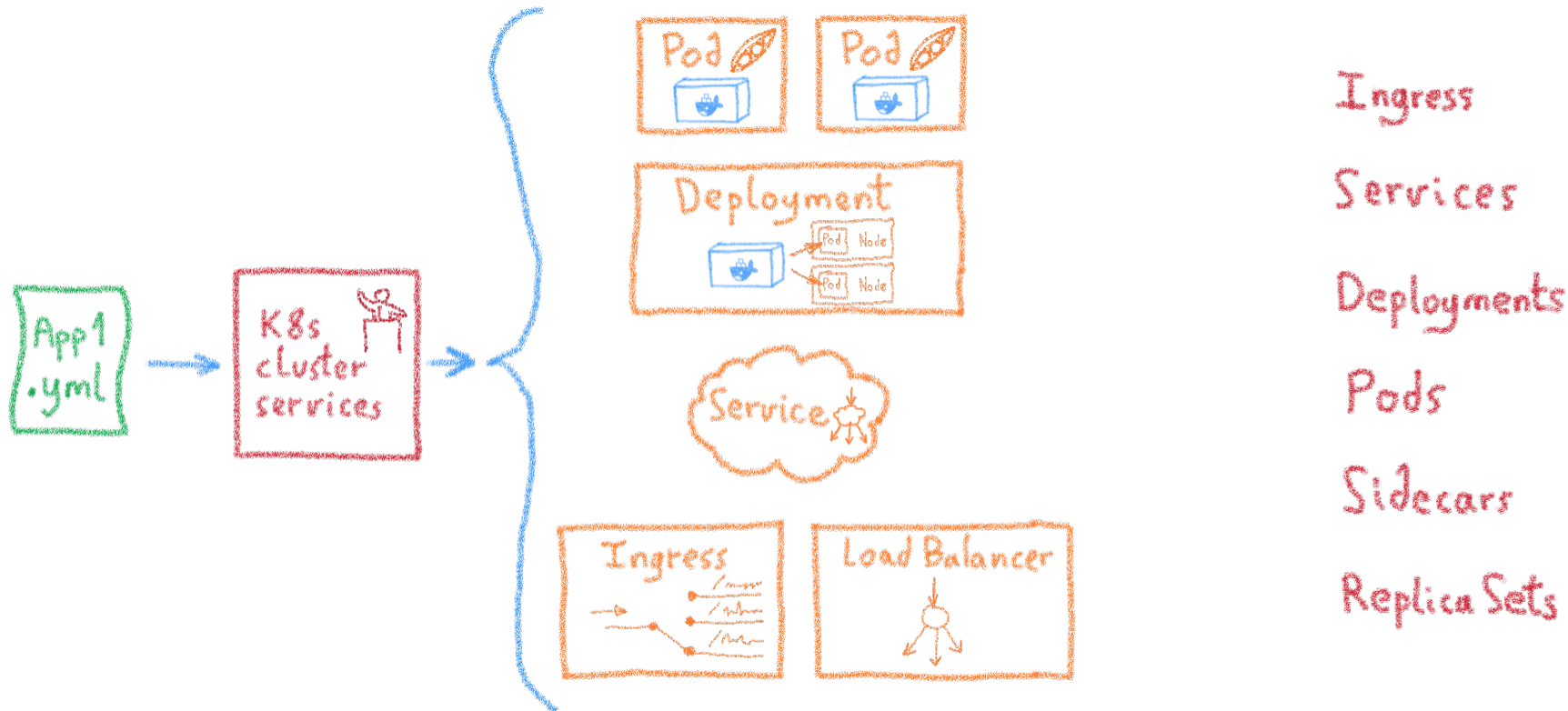


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# Kubernetes - Desired State Management



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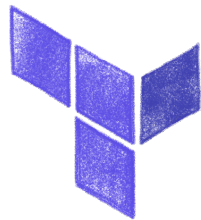


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# Infrastructure as Code



ANSIBLE



HashiCorp

Terraform



• Build



• Modify



• Version



your infrastructure



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# Containers? Pods? Ansible? Terraform?



So much more complexity!



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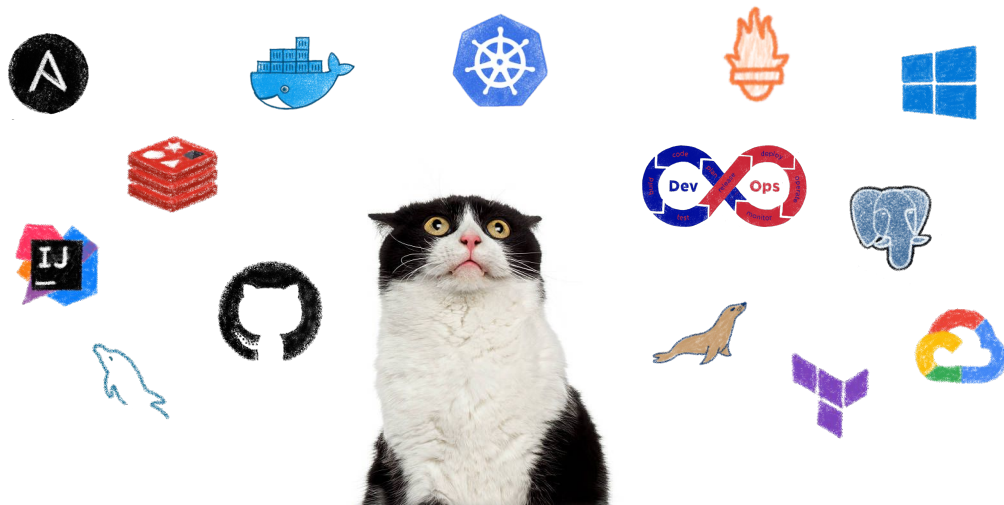
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# Becoming a developer in 2024

Do I need to know all that?



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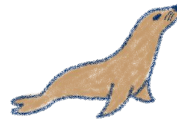
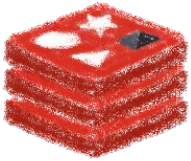
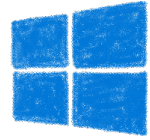


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# So many things to learn...



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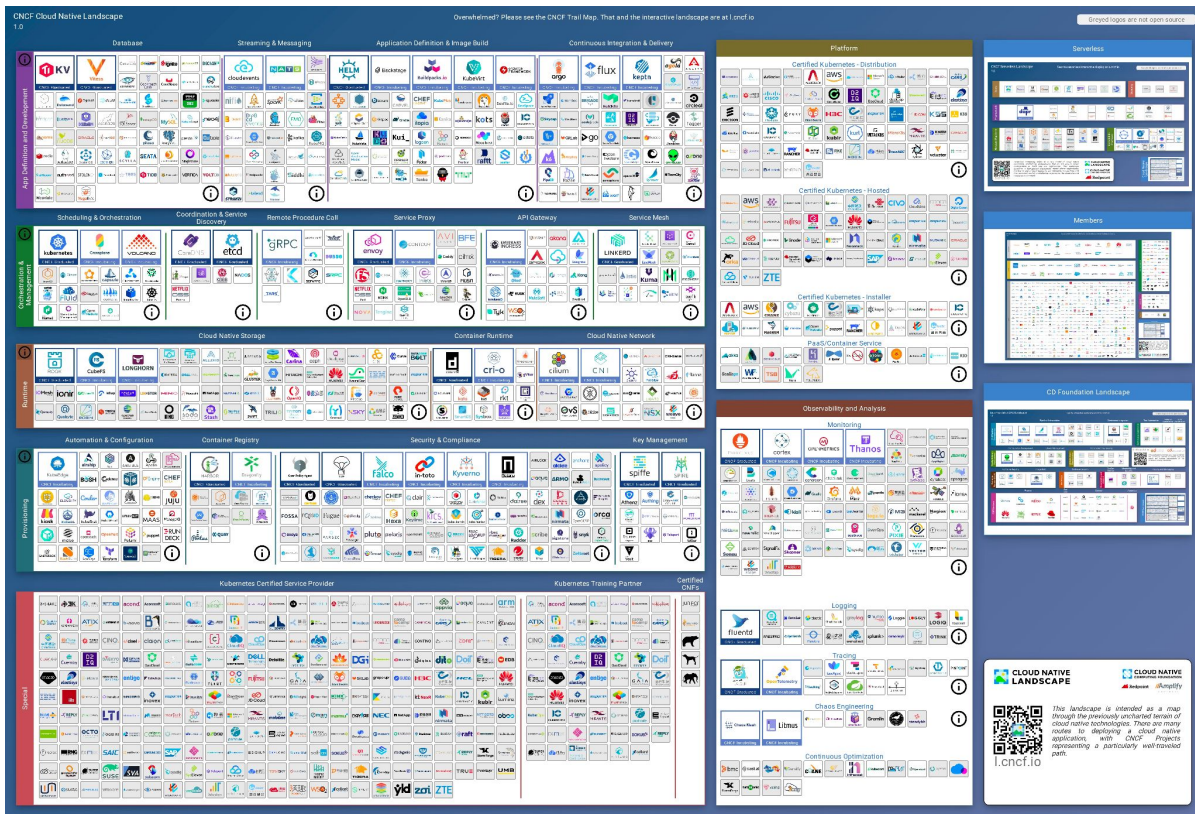


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# So many options ...



# Managing the self-service commodity



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# Shift left and Cognitive Load



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# Platform Engineering to the rescue

Without adding more complexity?



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# 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



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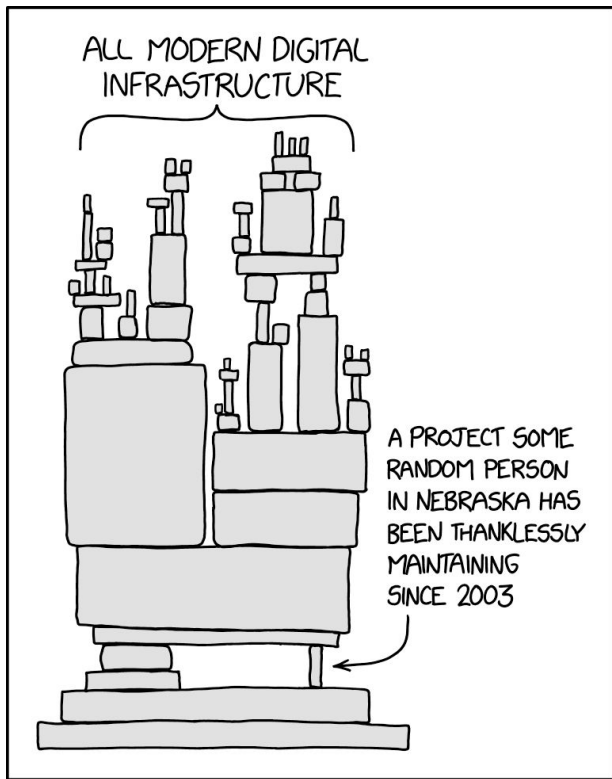


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# A fancy name for something already there



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



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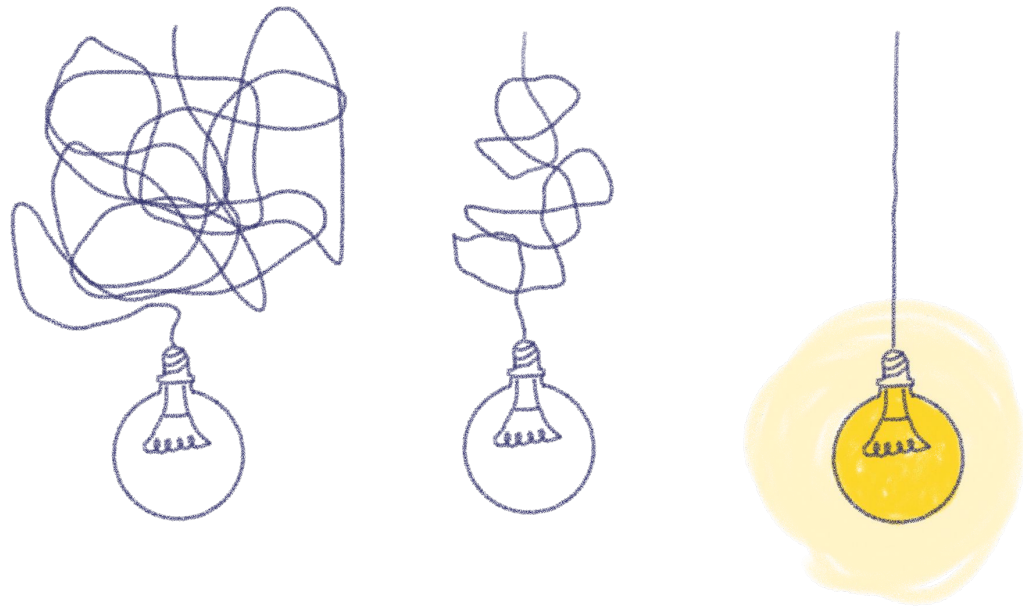


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# The purpose of Platform Engineering



Empowering developers while reducing complexity



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# But how can we create them?



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# GitOps



# What is GitOps?



Git is the  
single source  
of truth



Treat  
everything as  
code



Operations  
through Git  
workflows



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# Benefits of GitOps



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



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# Team Topologies

It's not only a tool, but an organisation



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## 4 fundamental topologies



Stream-aligned team



Enabling team



Complicated Subsystem team



Platform team



<https://teamtologies.com/>



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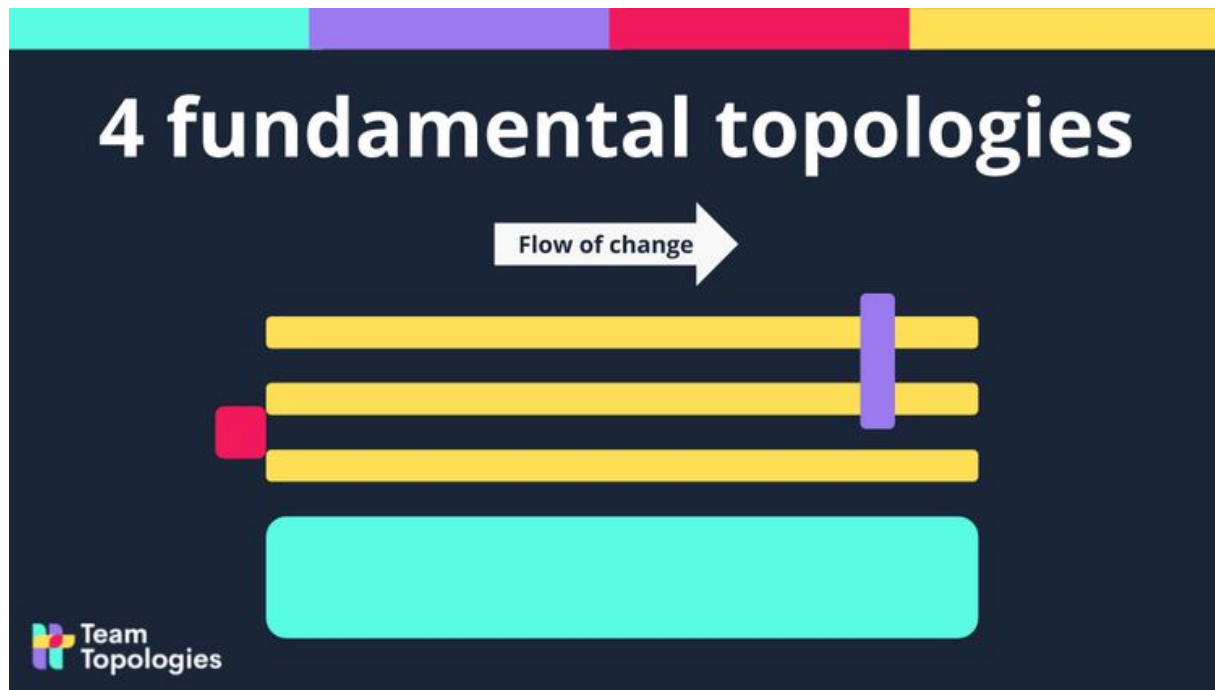


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# Team Topologies



<https://teamtologies.com/>



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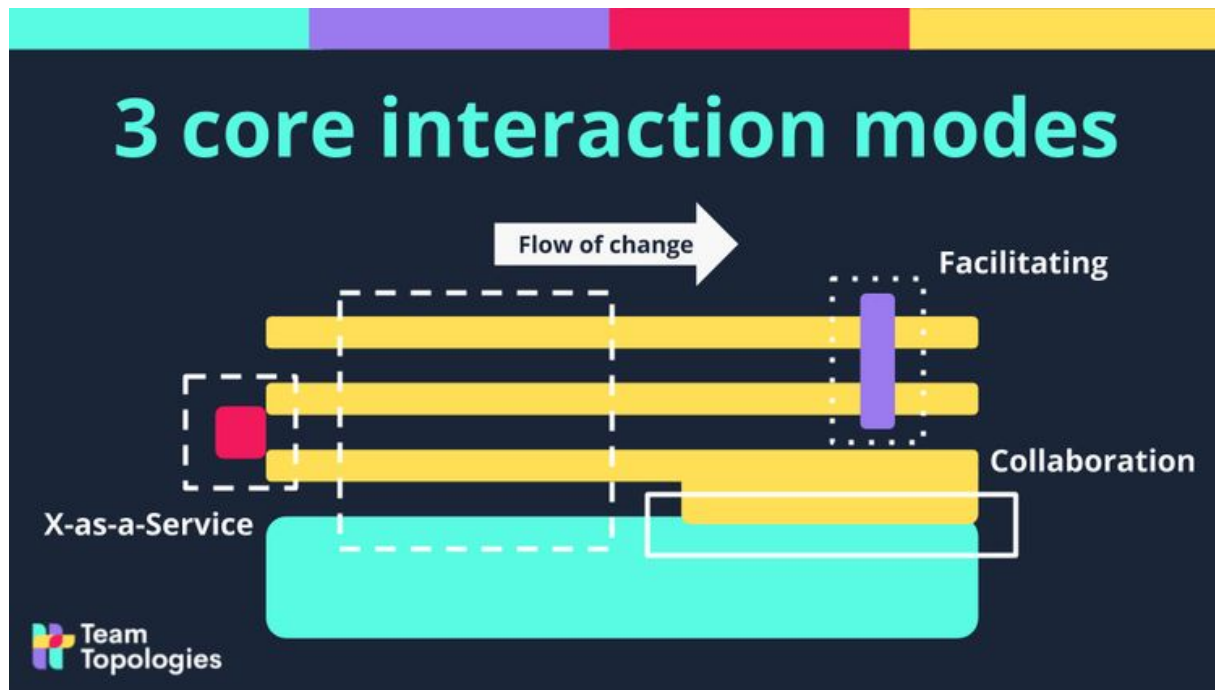


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# Team Topologies



<https://teamtologies.com/>



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# Principles of Platform Engineering

To make it work



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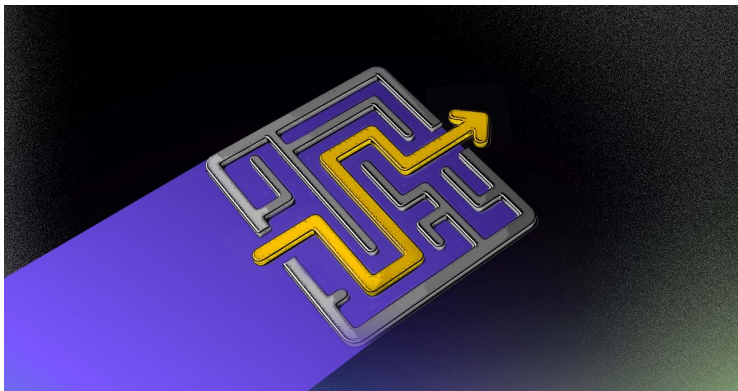
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# Paving golden paths

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.



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# Clear mission and role



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# Platform as a Product

## Work Types

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



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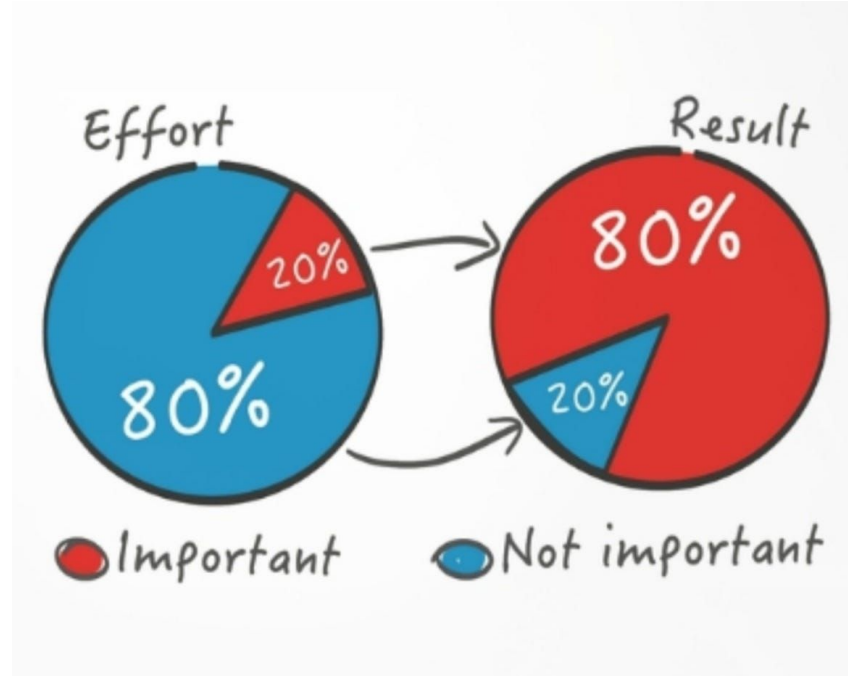


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# Focus on common problems



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# Glue is valuable



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# Don't reinvent the wheel



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**Rémi Verchère** ❄️  
@rverchere

bash will still be used

7:46 PM · Aug 8, 2023 · **290** Views



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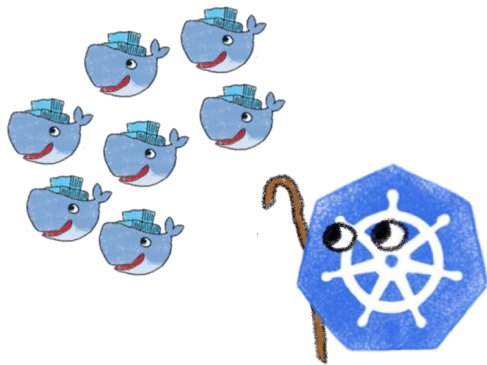
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# An IDP over Kubernetes

What could I use?



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# Over the shelf solution: OpenShift



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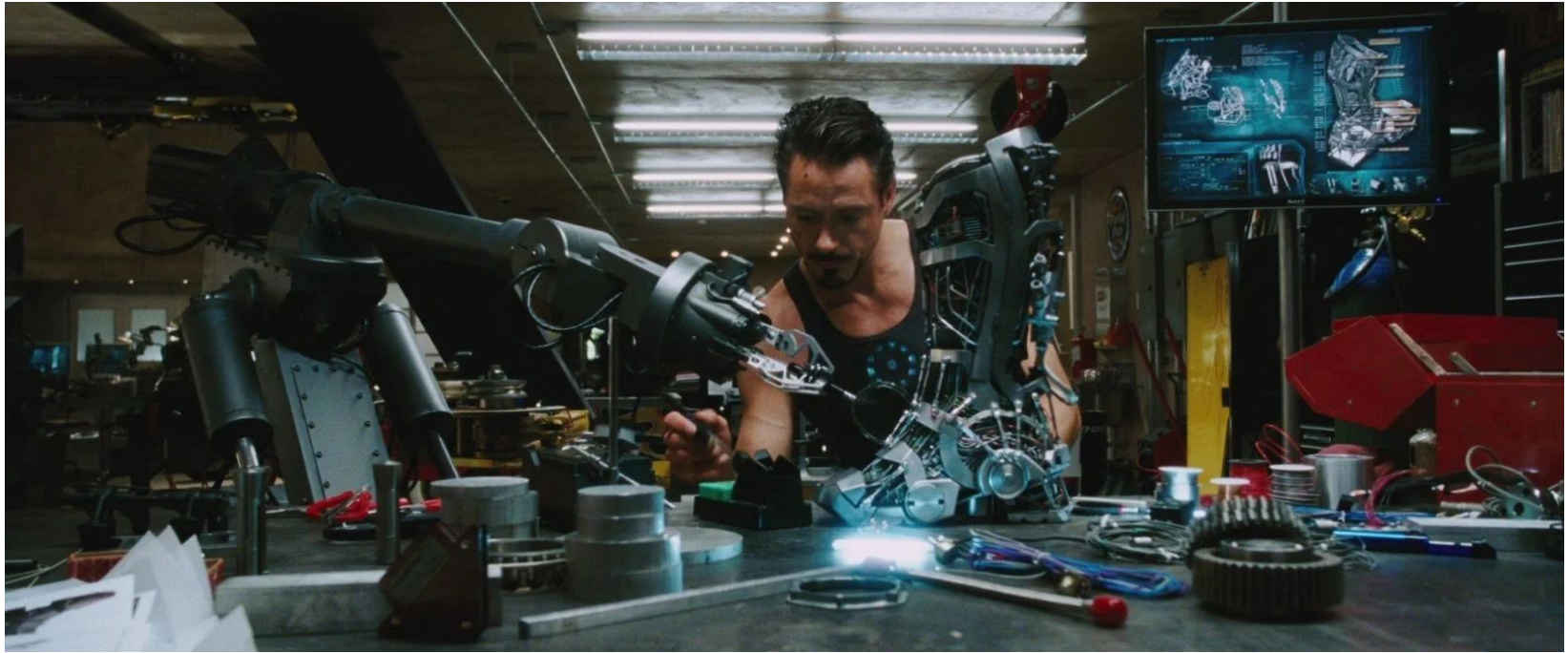


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# I don't want to pay for OpenShift



Let's build it ourselves!



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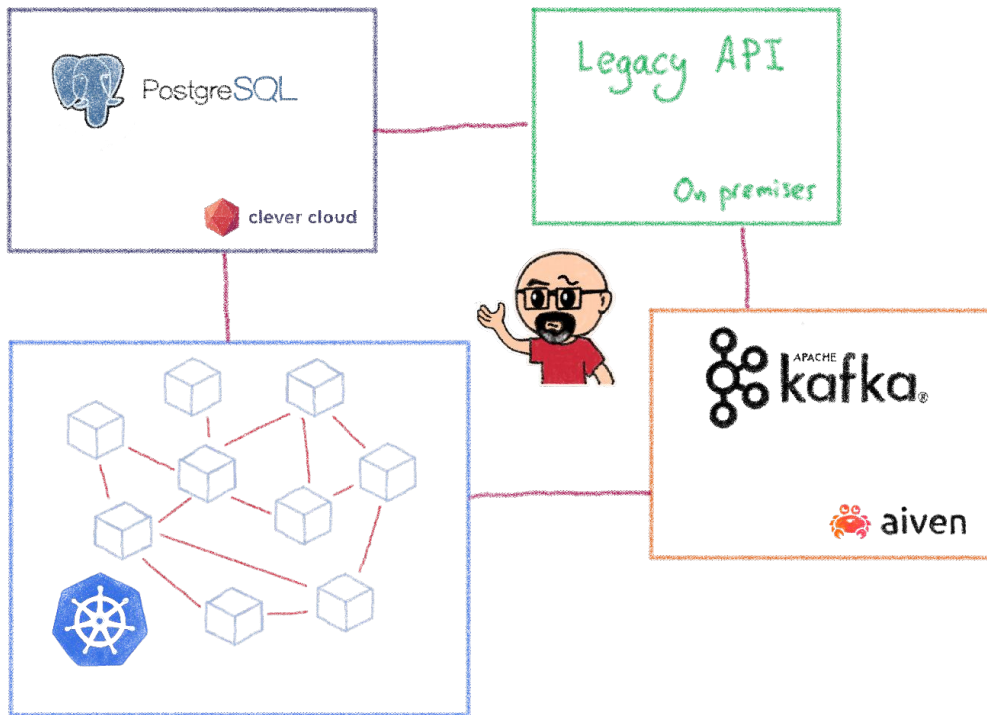


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# Don't put everything into Kubernetes



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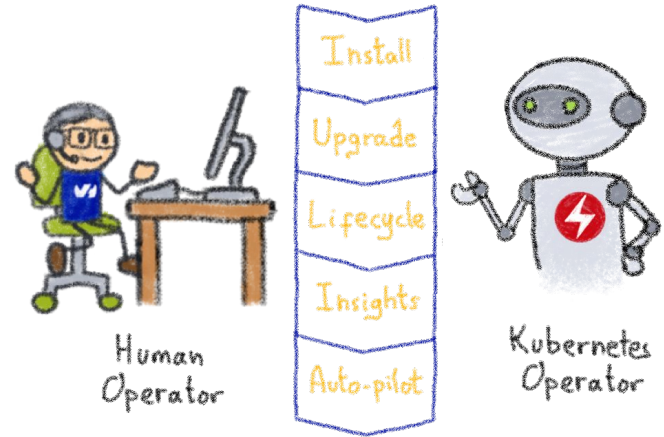
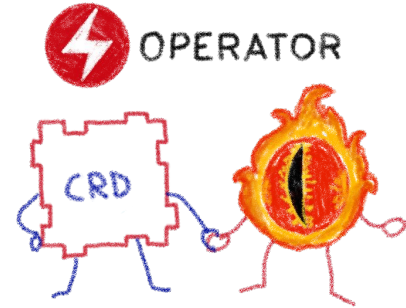
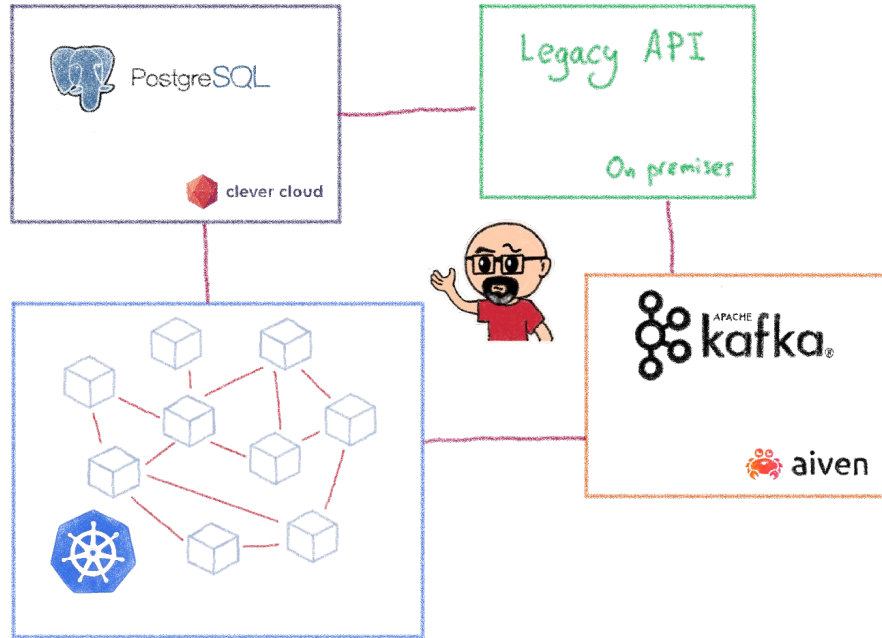


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# Operators simplify Kubernetes integration






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# Hey RivieraDev, operators ❤️ Java





 [ JAVA OPERATOR SDK ]

HOME DOCS CODE OF CONDUCT RELEASES  

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# So you have a bunch of operators...



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



## Too many options again...



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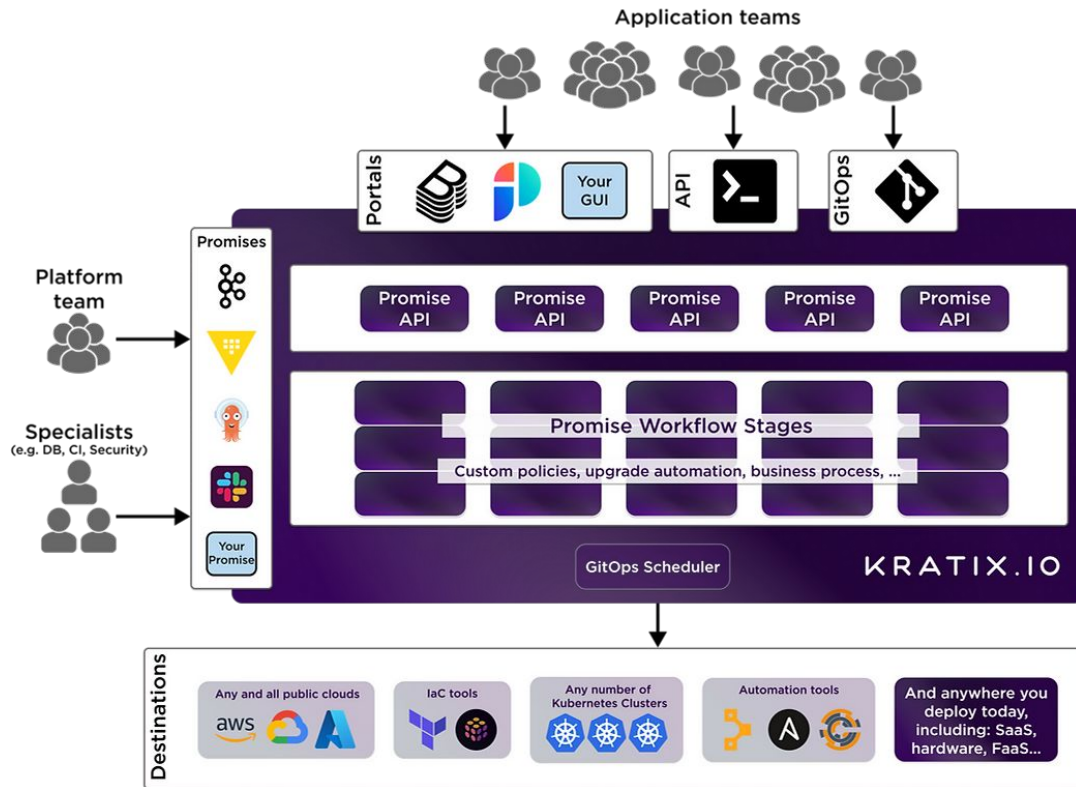
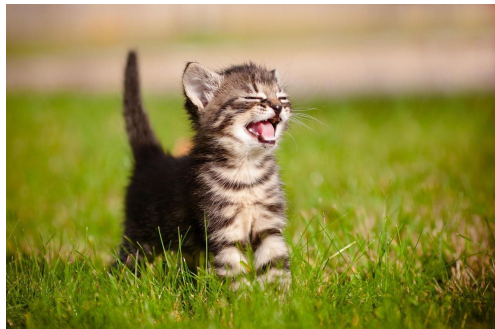


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# Use a Platform Engineering framework



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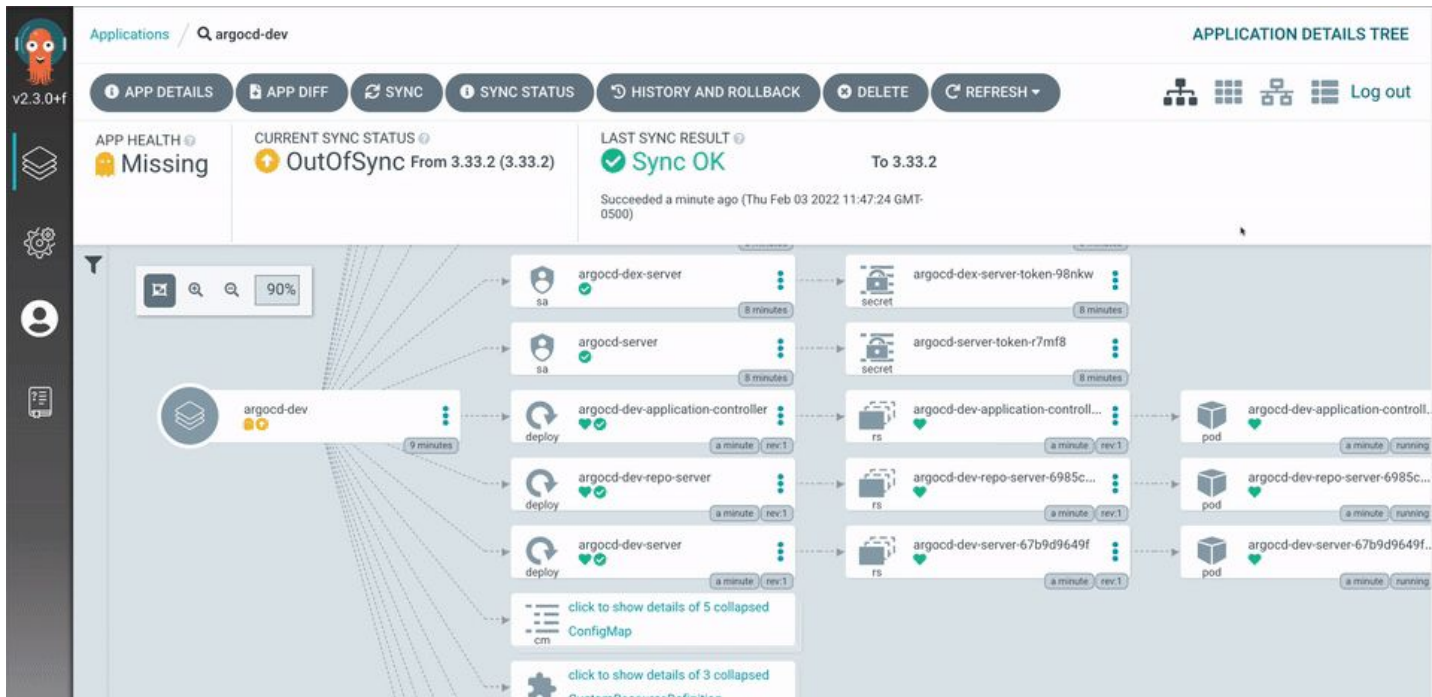


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# Set-up a robust CI/CD/GitOps pipeline



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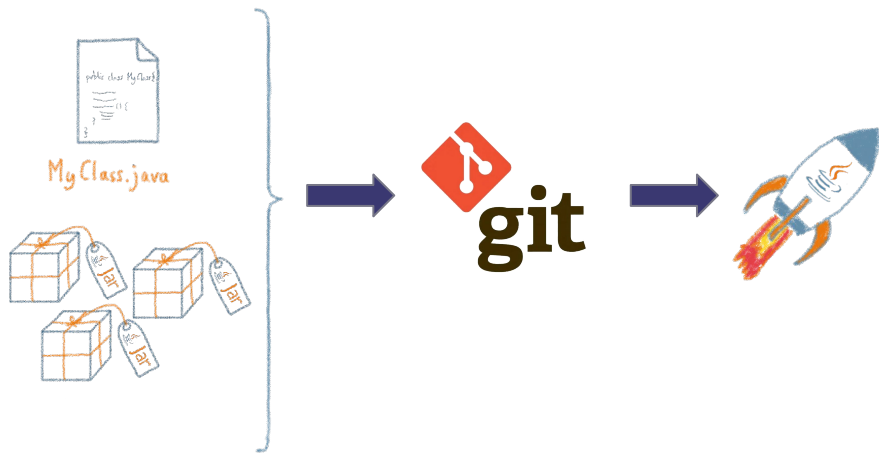
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# An IDP without Kubernetes

There is a life outside K8s...



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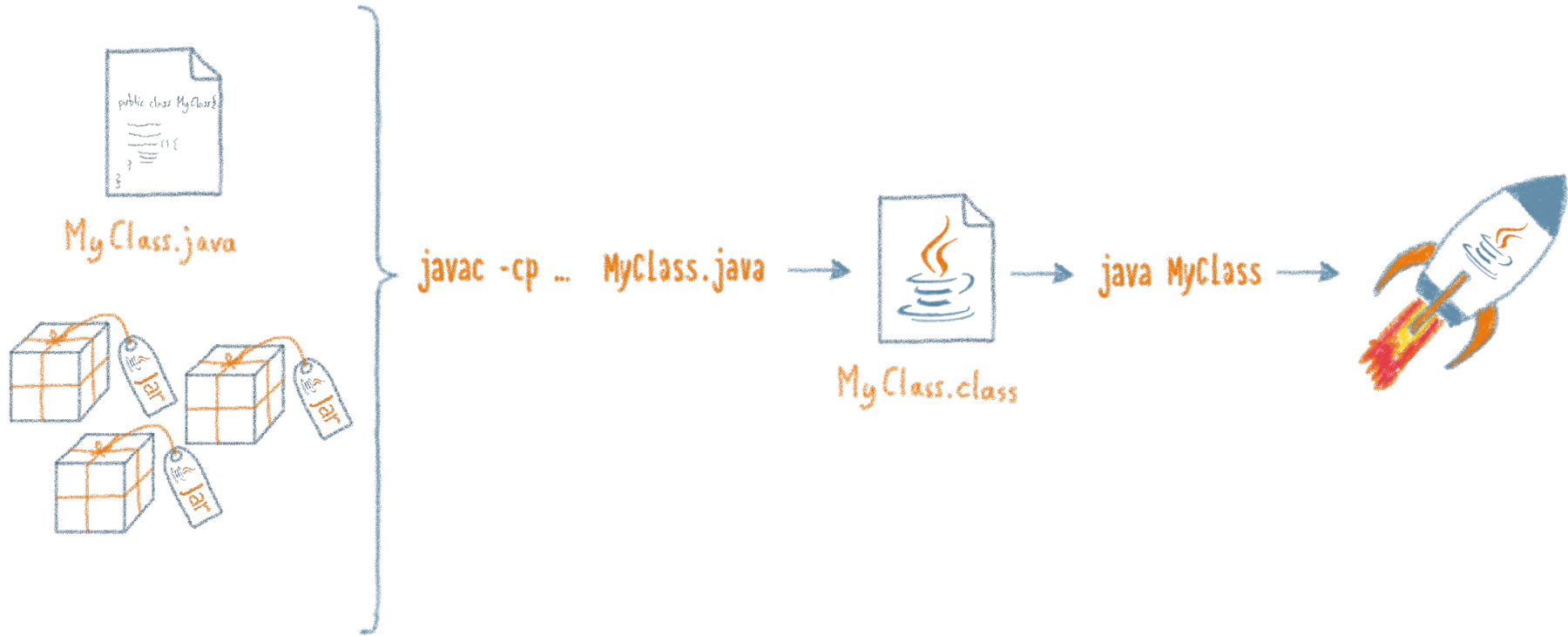


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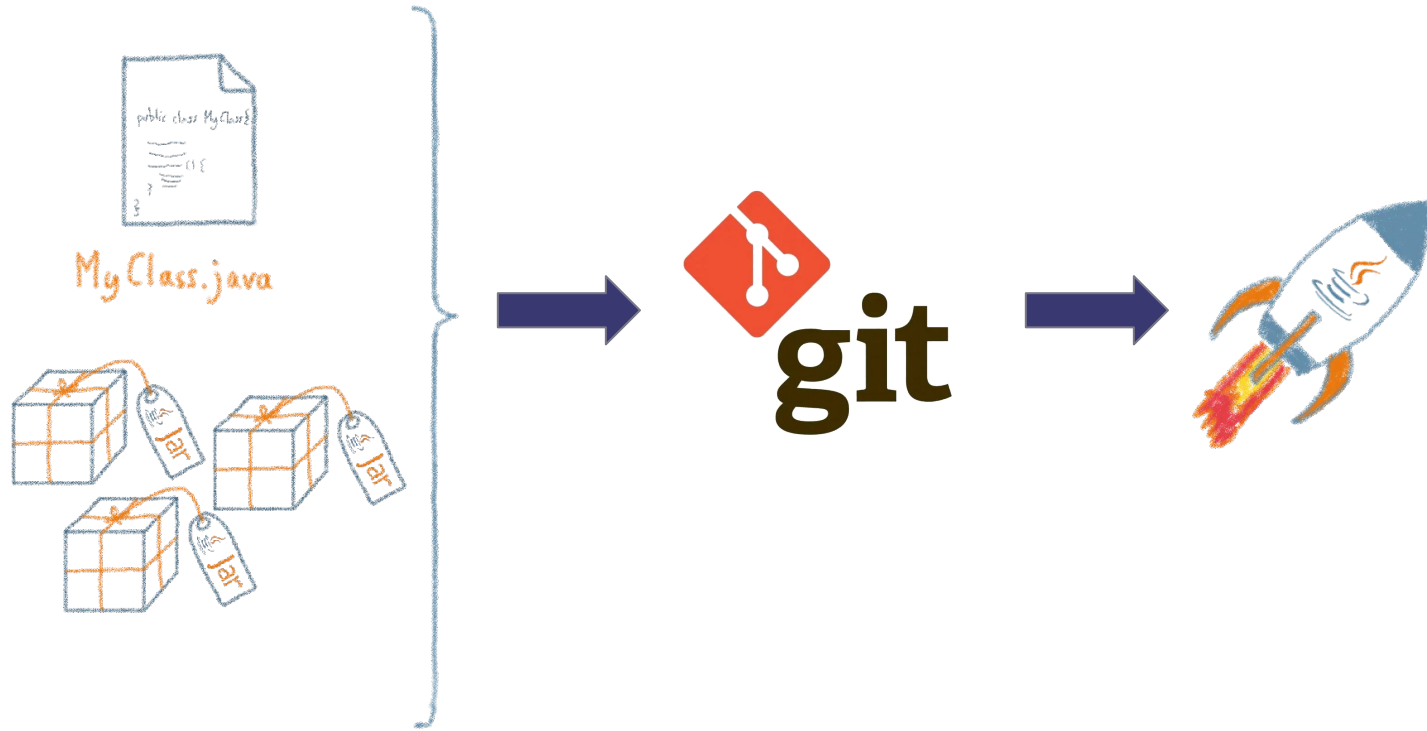


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# What if developers only developed?



# PaaS as cornerstone of a dev-centered IDP



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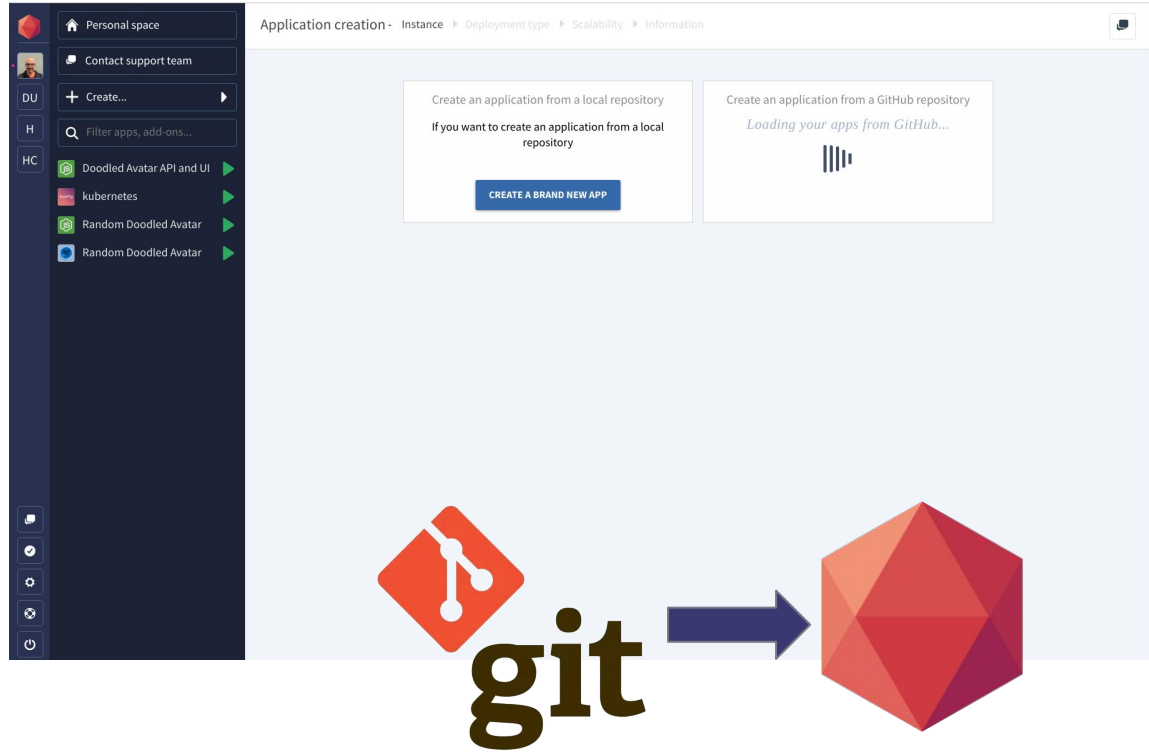


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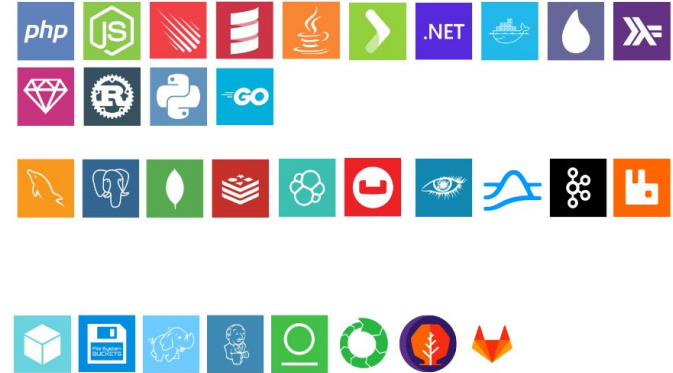


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# Clever Cloud



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# 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](#)



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