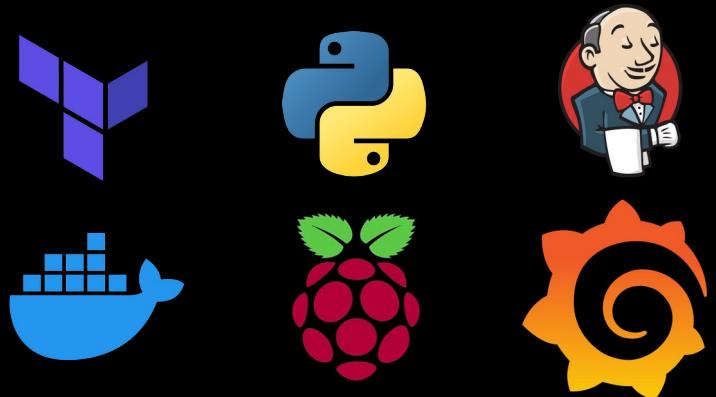
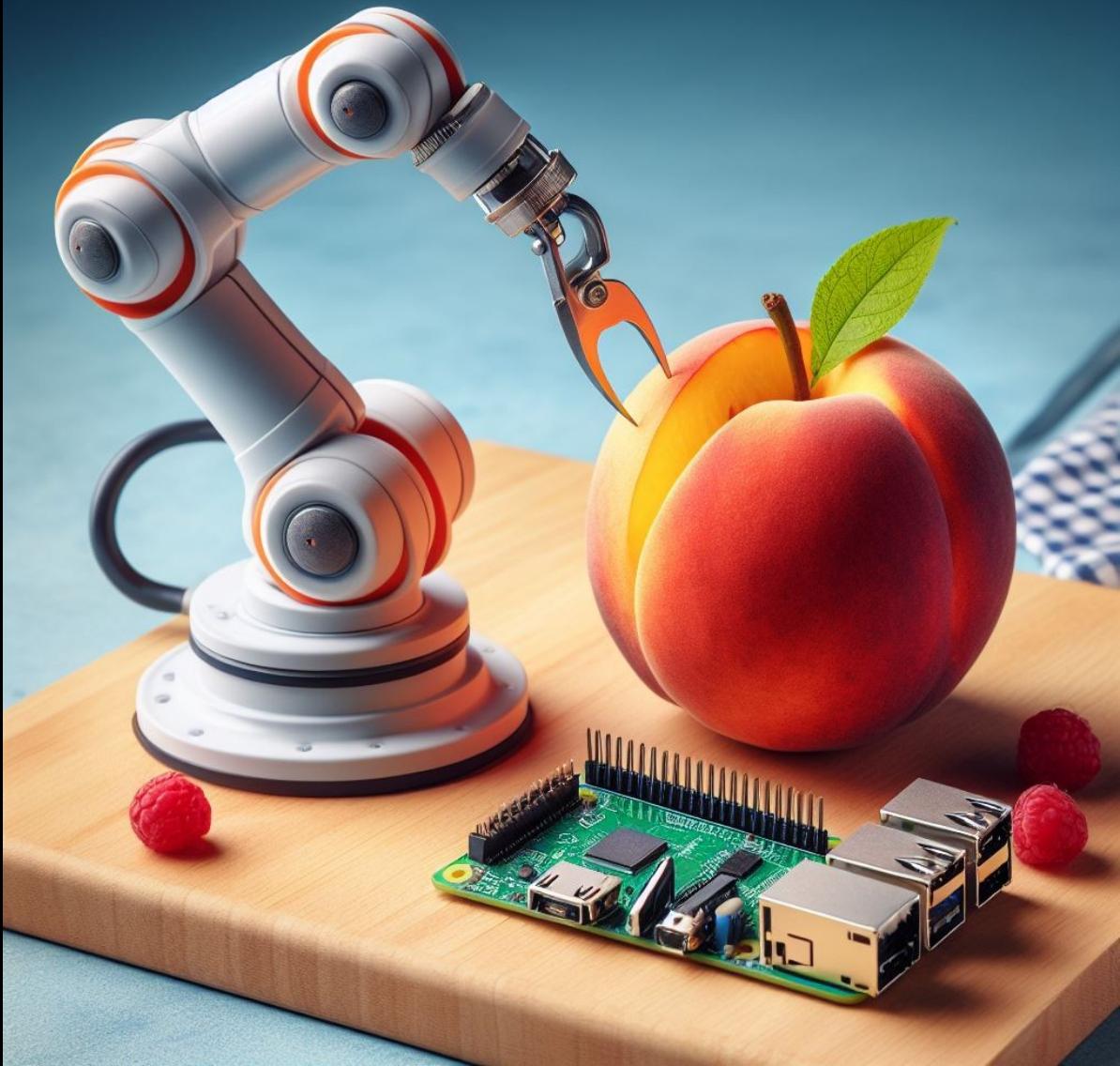


Pi-Peach Cutter



An End-to-End Pipeline with
DevOps, Produce, Cloud, Robotic



Presentation Overview



DevOps
Fundamentals



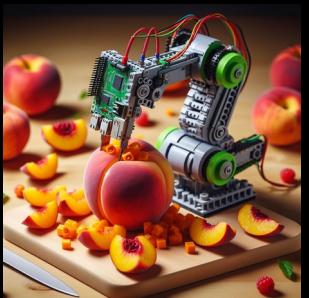
Continuous
Delivery



Infrastructure
-as-a-Code



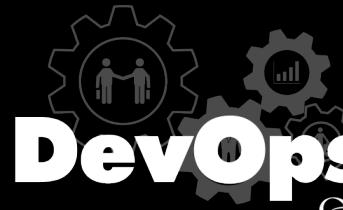
Observability



Container
Technologies



Summary

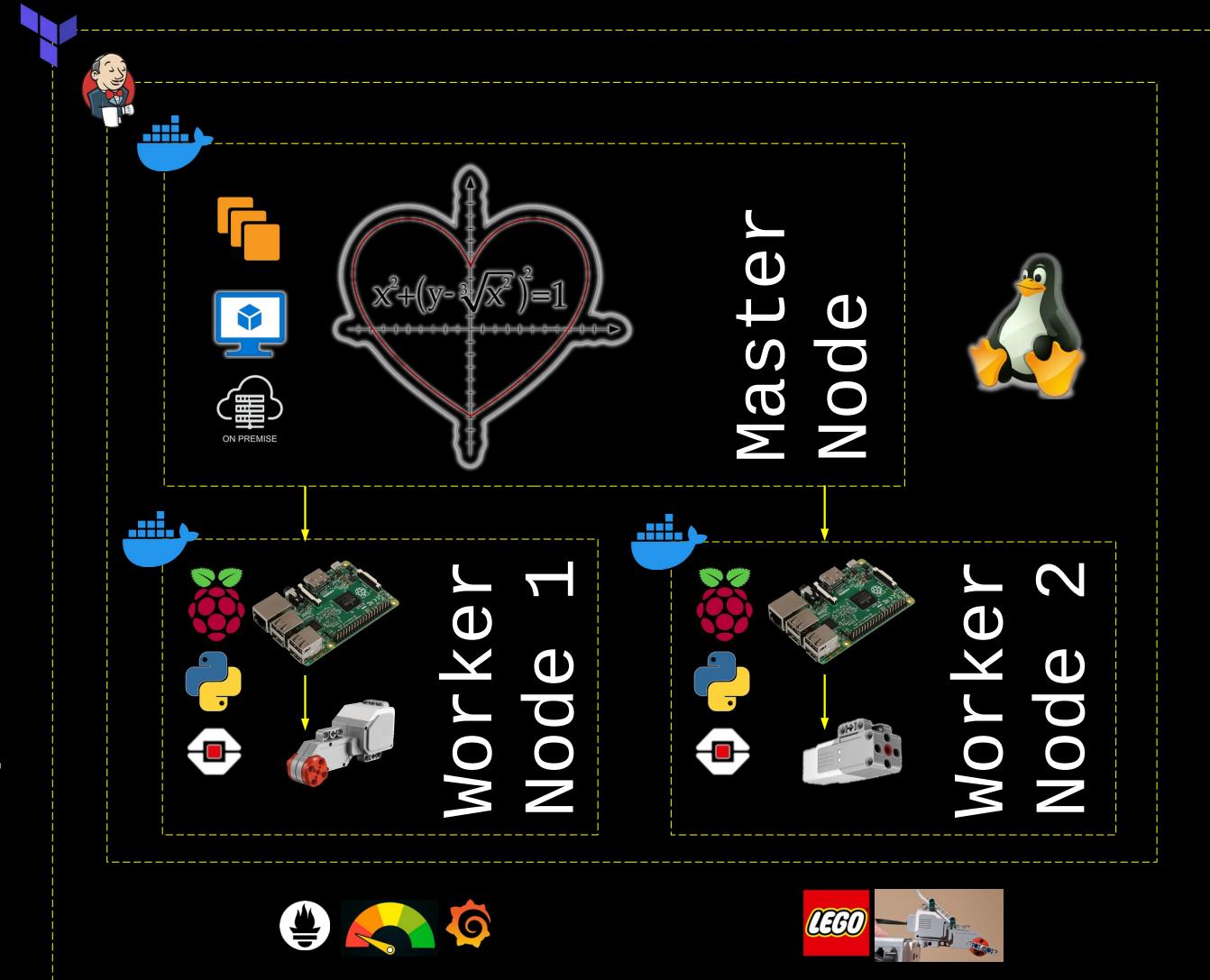


Fundamental

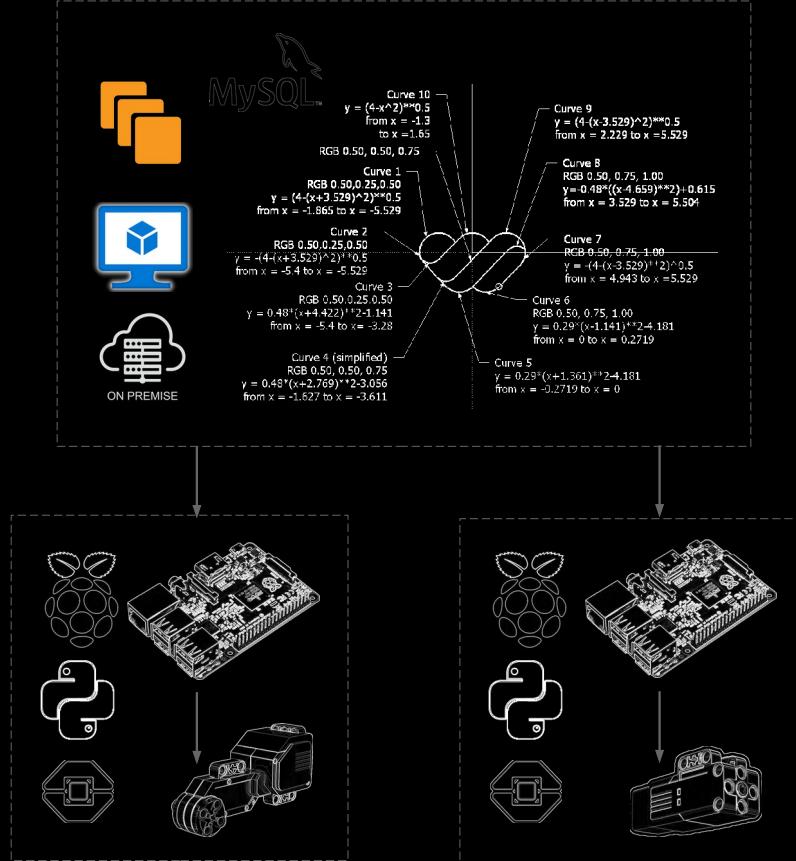
LINUX OS

GIT & GITHUB

ARCHITECTURAL
DIAGRAM



Infrastructure as Code for



Infrastructure as Code for



Java™ jenkins-cli.jar

```
java -jar jenkins-cli.jar  
-auth admin:$passjenkins  
-s http://localhost:8080  
create-job project6 < config.xml
```

Infrastructure as Code for MySQL™

```
$ sudo apt install mysql-server
```

```
$ sudo service mysql status
```

- mysql.service - MySQL Community Server

...

Active: active (running) since ...

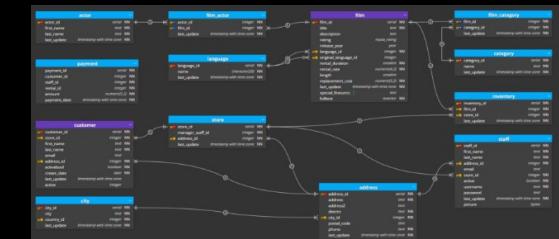
```
$ sudo mysql
```

Welcome to the MySQL monitor.

```
mysql> USE mysql;
```

```
mysql> select * from global_grant;
```

...



Infrastructure as Code for



Pybricks MicroPython v1.11 2020-05-06; linux version

Use Ctrl-D to exit, Ctrl-E for paste mode

```
>>> from pybricks.hubs import EV3Brick  
>>> from pybricks.ev3devices import Motor  
>>> from pybricks.parameters import Port  
>>> ev3 = EV3Brick()  
>>> motor_b = Motor(Port.B)  
>>> motor_b.run_target(1000, 100)
```

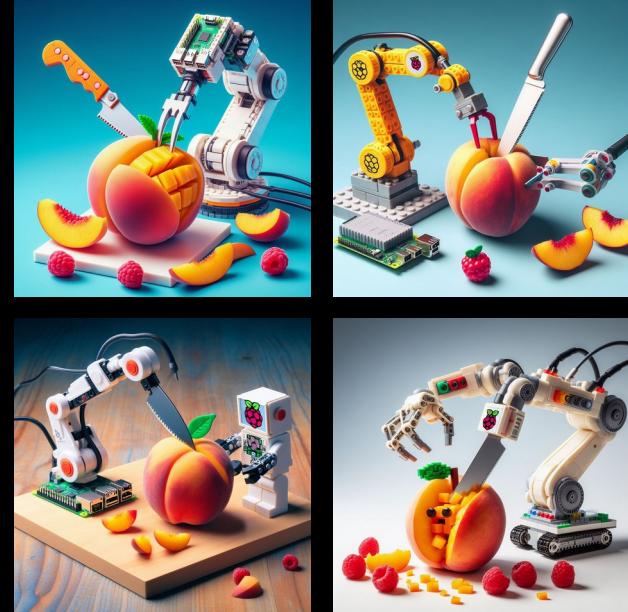
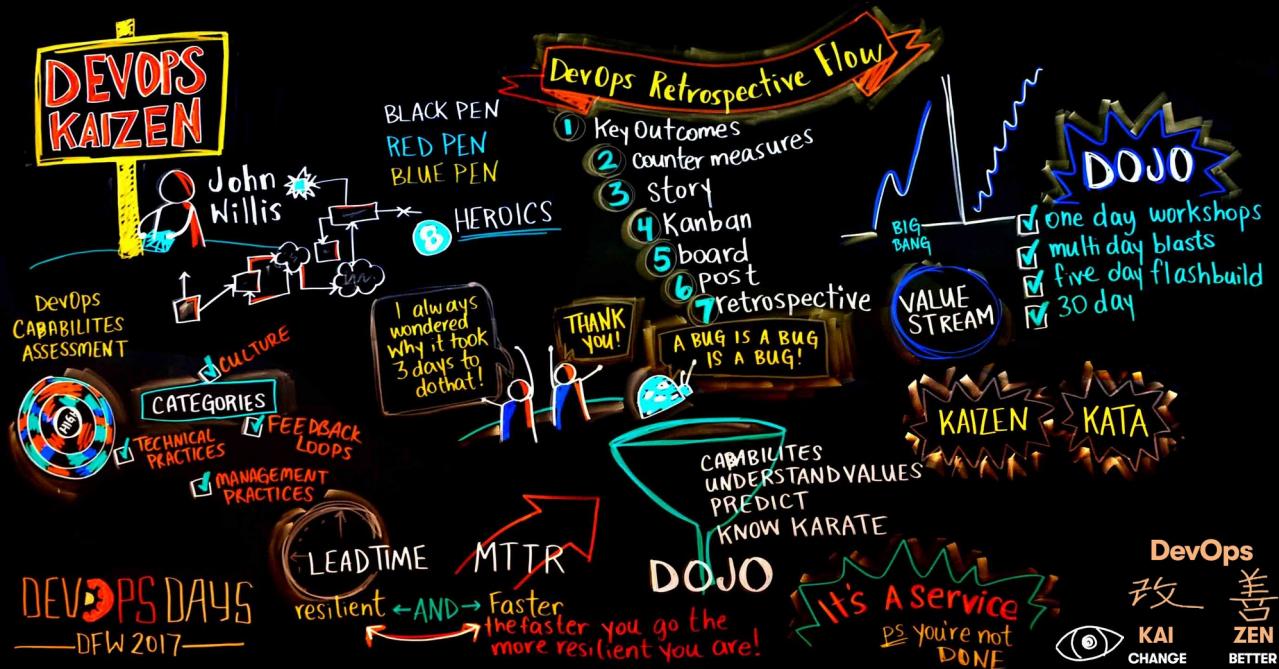


Infrastructure as Code for

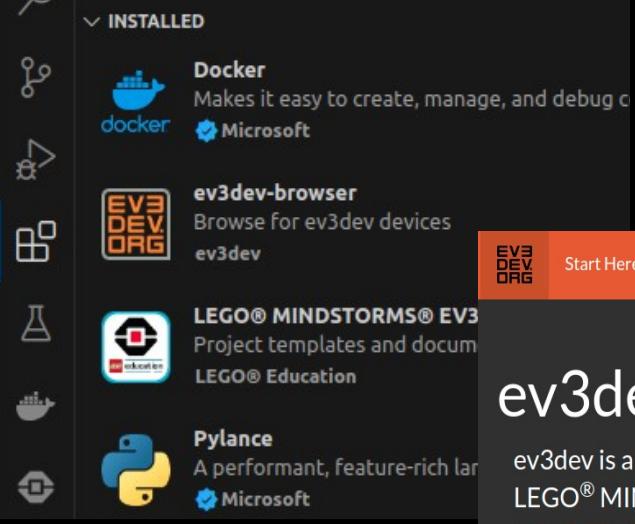


```
$ sudo snap install helm --classic
$ helm repo add prometheus-community ...
$ helm repo update
$ kubectl create namespace monitoring
$ helm install monitoring ...
$ kubectl apply -f ev3.yaml
$ kubectl port-forward ...
$ kubectl port-forward ...
```

DevOps Kaizen, Container Technologies



Bring Docker Containers Altogether



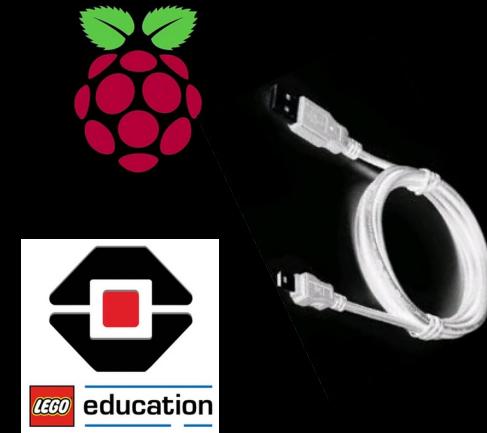
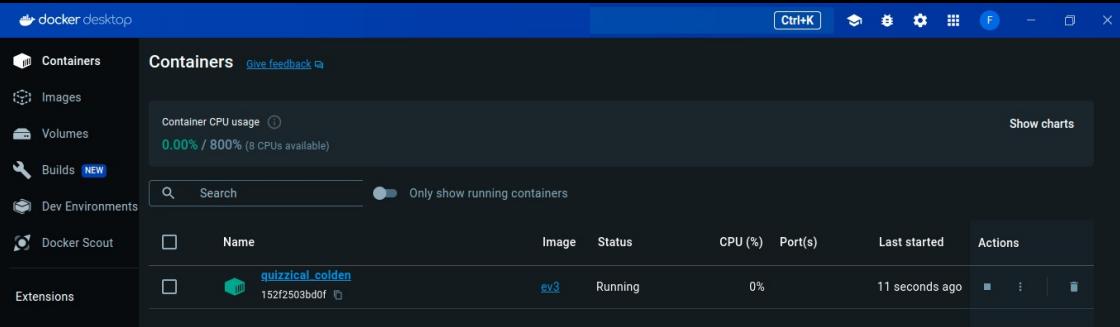
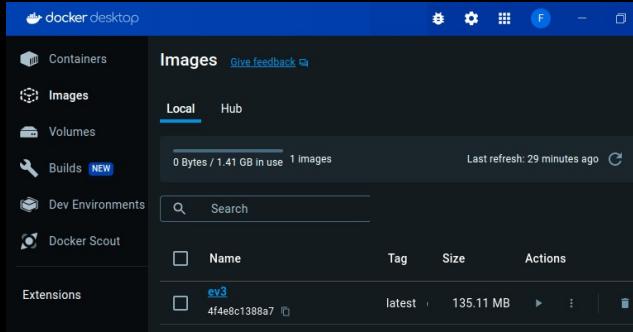
ev3dev is your EV3 *re-imagined*

ev3dev is a [Debian Linux](#)-based operating system that runs on several LEGO® MINDSTORMS compatible platforms including the [LEGO® MINDSTORMS EV3](#) and [Raspberry Pi-powered BrickPi](#).

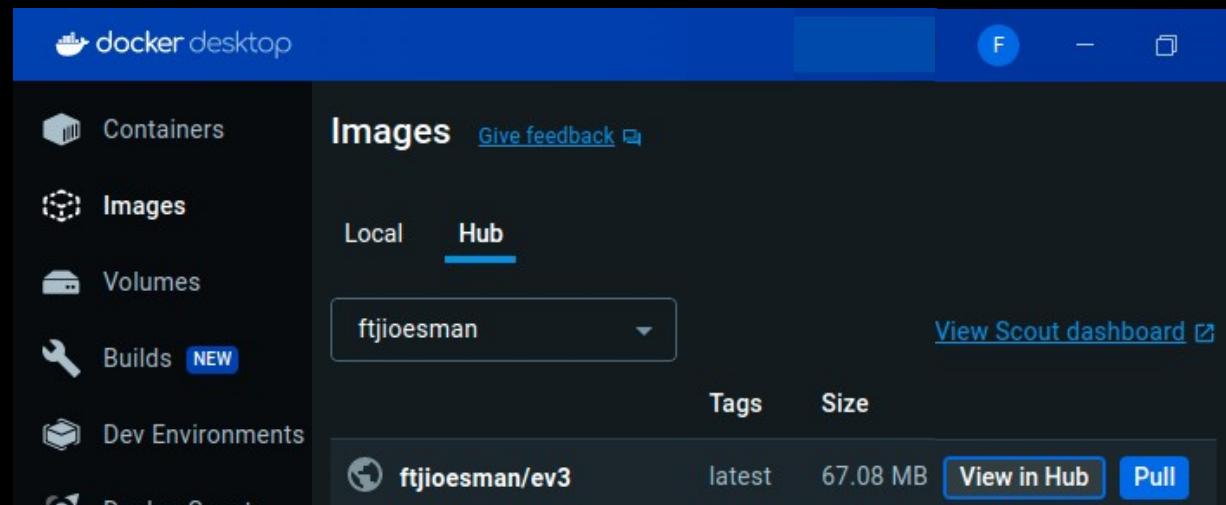
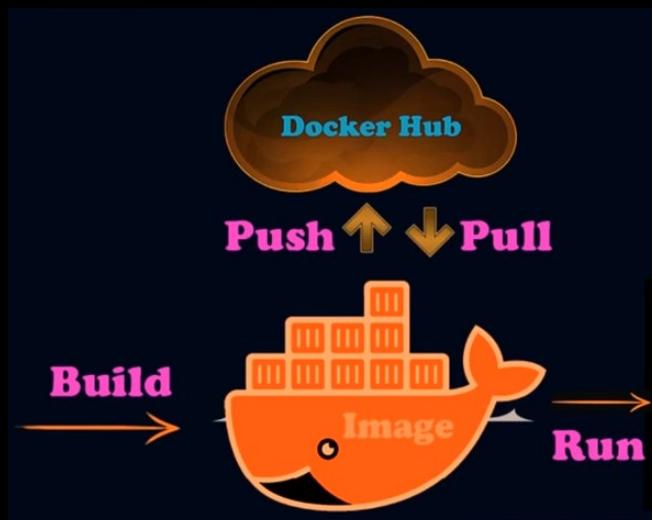
Just like you can take apart your LEGO® models and build something completely different, we have reverse-engineered the EV3 and created a new software platform for programming your robots.



Dockerfile, docker Build and Run



DockerHub, docker Push and Pull



Screenshot of the Docker Desktop application interface. The title bar says "docker desktop". The main menu has "Images" selected. There are tabs for "Local" and "Hub", with "Hub" currently active. A dropdown menu shows "ftjoesman". On the right, there is a "View Scout dashboard" link. The table below lists an image entry:

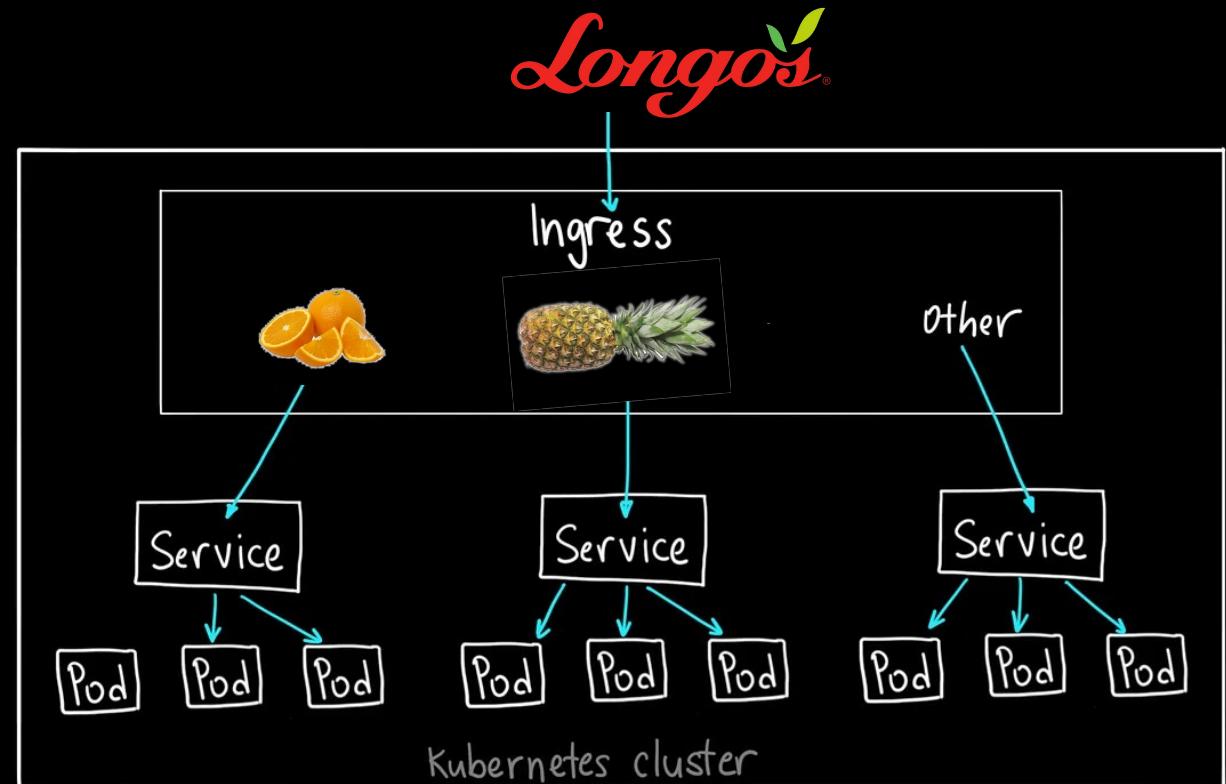
	Tags	Size	
 ftjoesman/ev3	latest	67.08 MB	View in Hub Pull

docker Kubernetes Cluster

Host-Based
Routing Ingress

Load Balancer
Services

Deployment

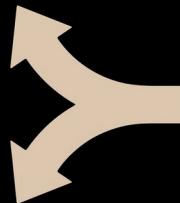


CREATE, LAUNCH, CONFIGURE, TRIGGER

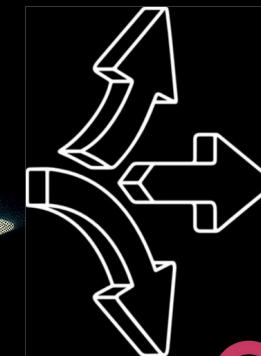
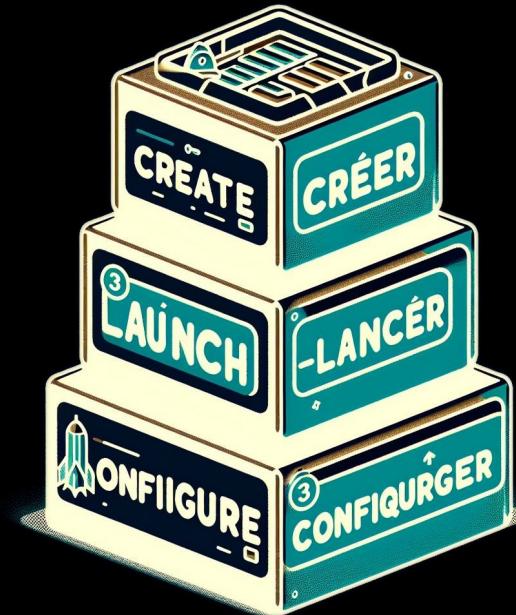
Java Jenkins -cli.jar



Web UI



{



cron



Pipelines with syntax

Scripted Pipeline: Most functionality provided by the Groovy language is made available to Scripted Pipeline, which means it can be an expressive and flexible tool and it is ideal choice for power-users with complex requirements.

Example (usually within sh command)

docker run ev3



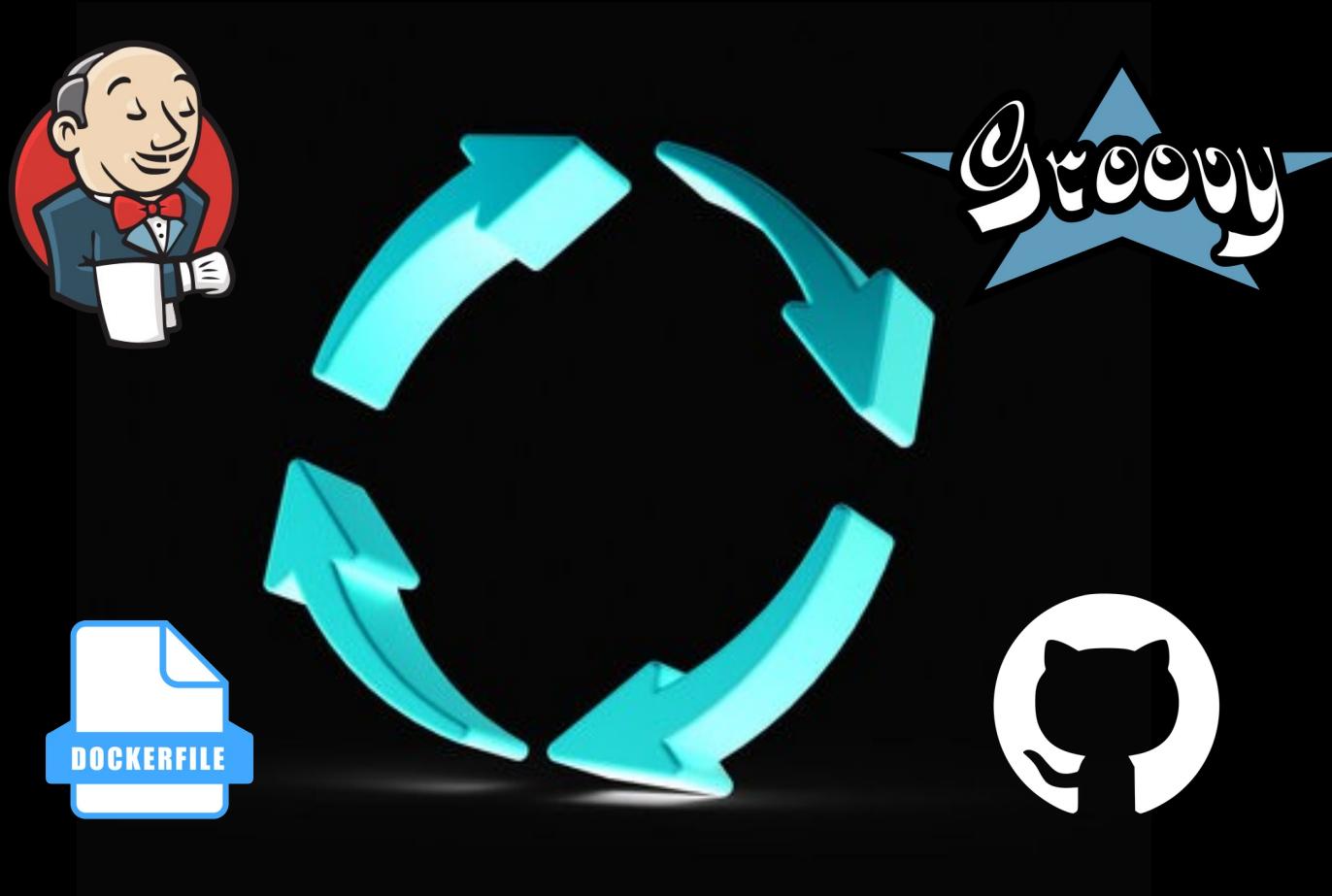
Pipelines Declarative Syntax

Declarative Pipeline: Presents a more simplified and opinionated syntax. It must be enclosed with a pipeline block and it has a strict and pre-defined structure. It is friendly for beginners.

Example

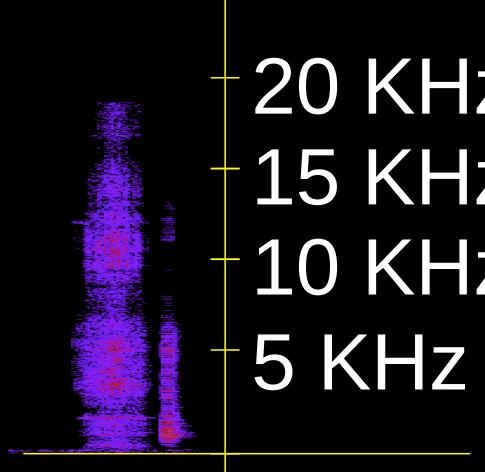
```
docker.image(ev3).run
```

Committing code to GitHub Repo



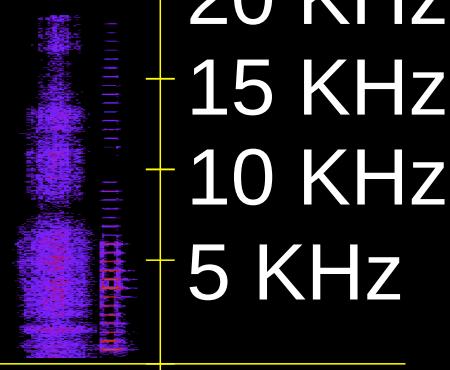
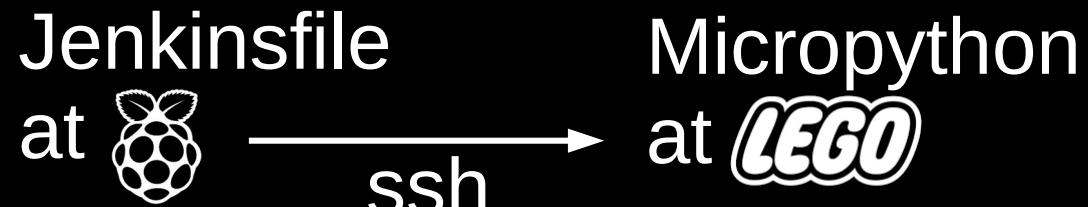


Leverage Jenkinsfiles, MicroPython



20 KHz
15 KHz
10 KHz
5 KHz

Motor(Port.B).run_target(1000, 180)
EV3Brick().speaker.beep(**100**, 100)



20 KHz
15 KHz
10 KHz
5 KHz

Motor(Port.B).run_target(1000, 180)
EV3Brick().speaker.beep(**500**, 100)

Observability



Prometheus



Summary

More than AWS, Kubernetes,
Docker, Produce, Robotic, IoT.
It's reliability, efficiency!

Wonderful Learning with Nhat,
Usman, Dawei, Juan, Rakin, Lara.