Simplifying your life with Docker, Jenkins and Minikube

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Another day at the office

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- Boss stops by your desk

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Another day at the office

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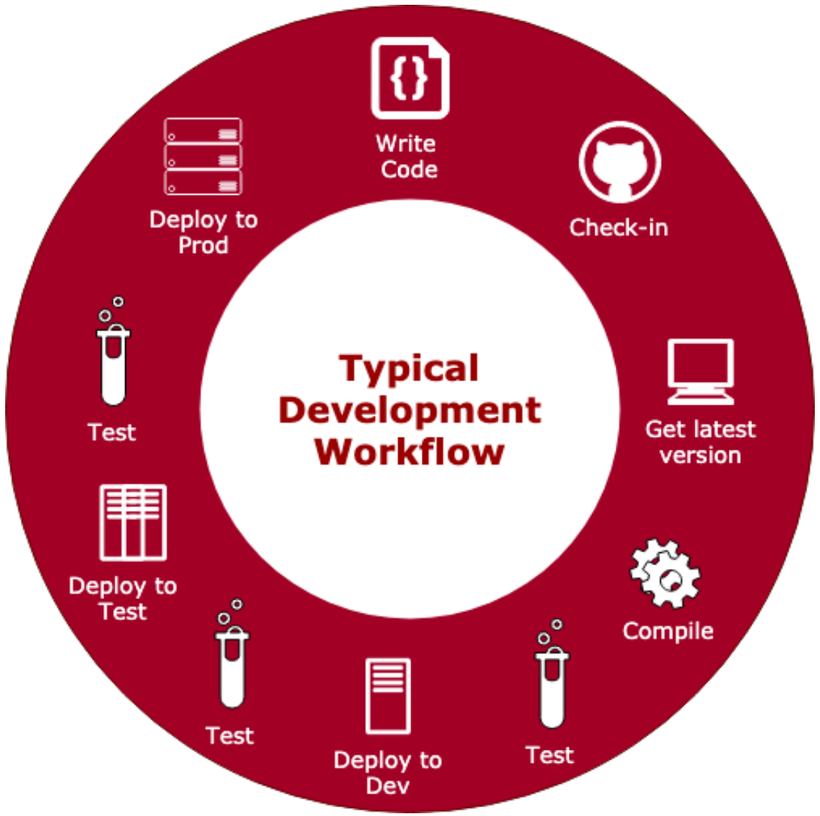
  - It was requested two weeks ago
  - They forgot to tell you
  - It was due yesterday

How you really feel

Long change cycle

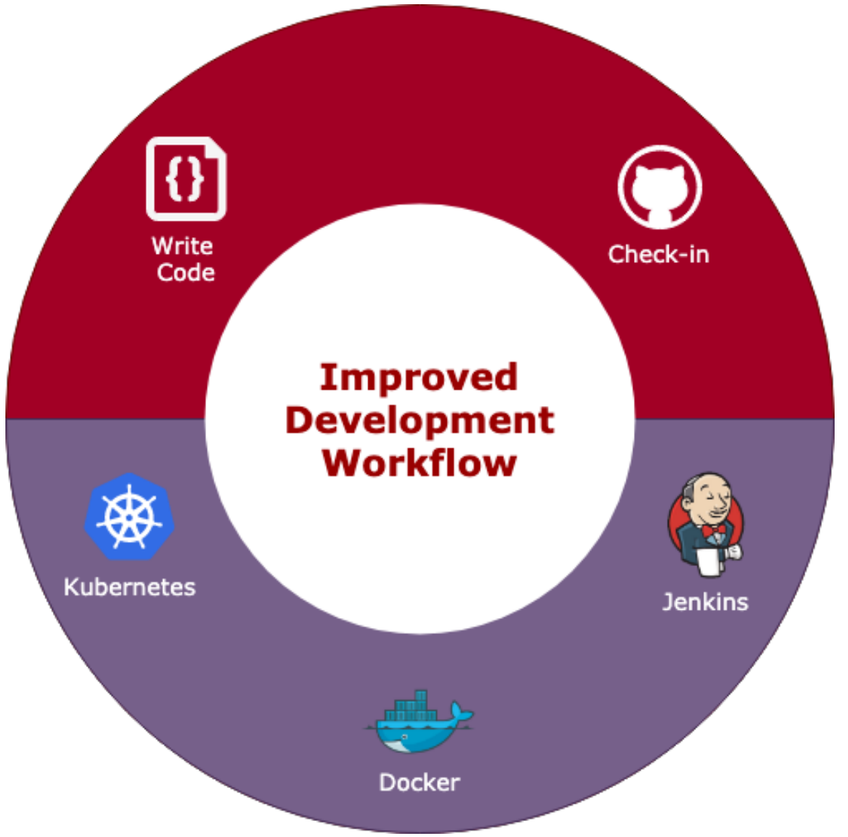


- Involve a bunch of manual steps
- Most of the steps do not add value
- Time consuming and waste resources
  - Up to 40% of a regular day is spent on non value add tasks (environment setup, waiting for tests & builds, etc)[1].
- A single missed step can compromise the whole application

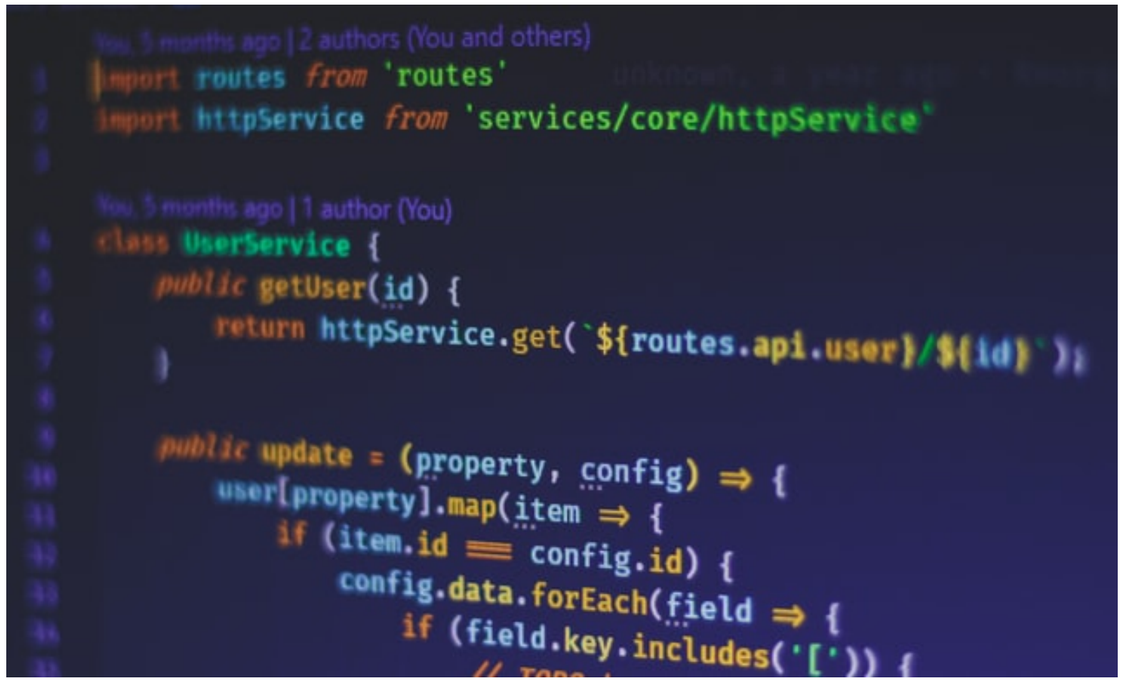
[1] infoworld

It does not have to be like this!

- There are tools that can help to automate the process. For example:
  - Containers simplify the bundling of the application
  - Tools like Jenkins, TravisCI and Atlassian Pipelines help with CI/CD
  - Kubernetes manages the orchestration
- The goal is to allow developers to focus on value-add tasks!



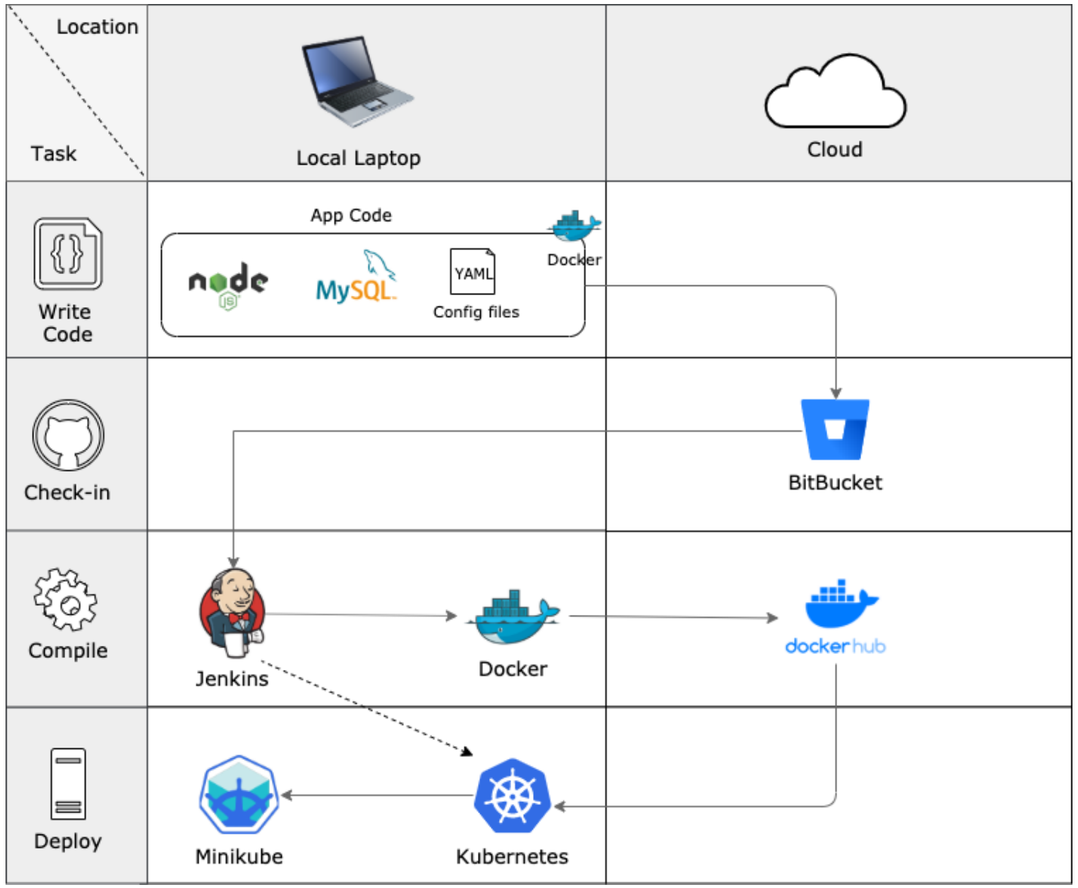
Demo Time



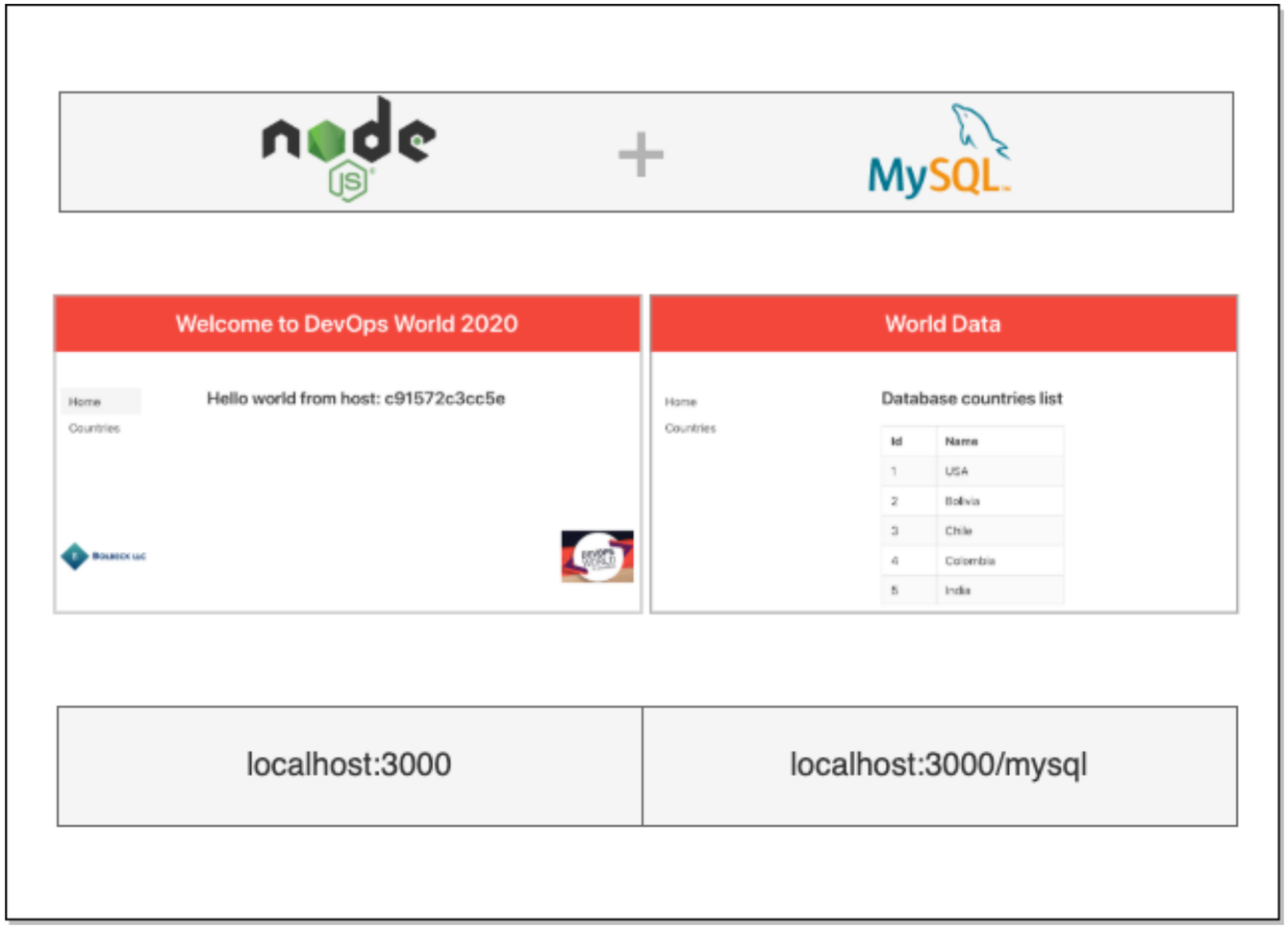
Goals

- Automate typical every day tasks so that we can focus on creating awesomeness!
- Do everything (or most) in code so that it is repeatable & source controlled

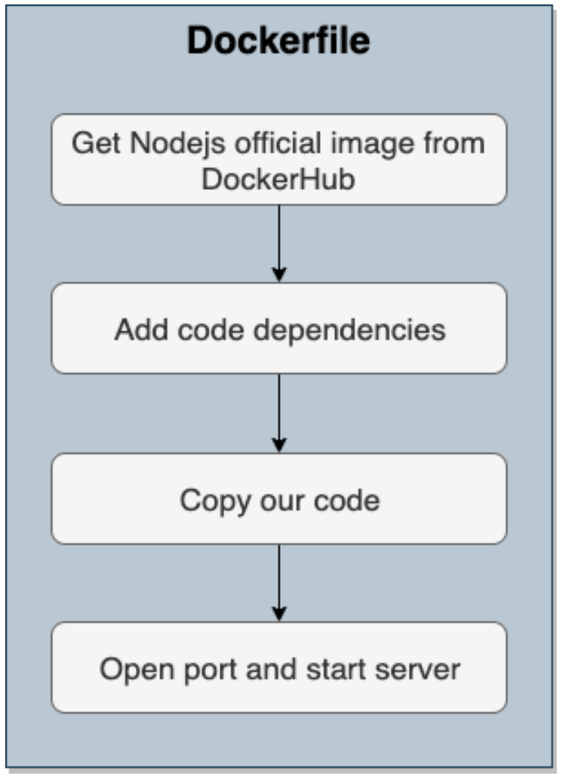
Demo Roadmap



Our Application



Custom Nodejs Image

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WORKDIR /code
COPY package.json /code
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RUN npm install chai
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EXPOSE 3000
CMD ["npm","start"]
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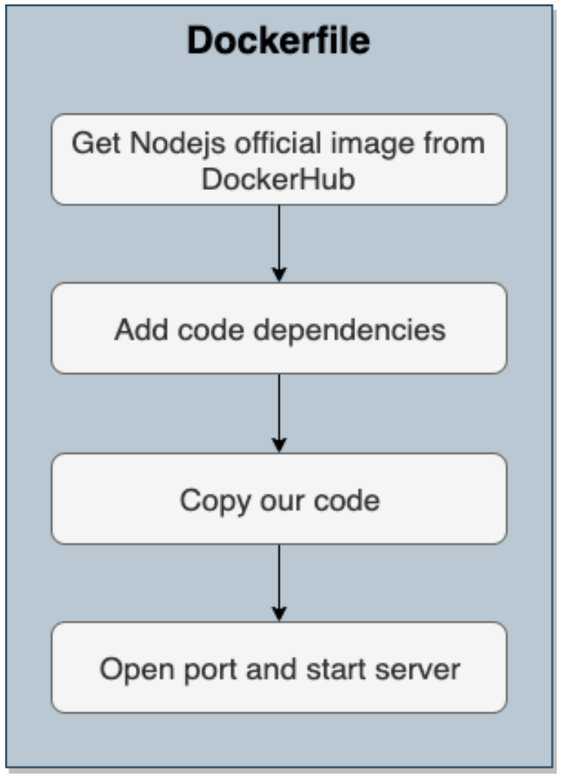


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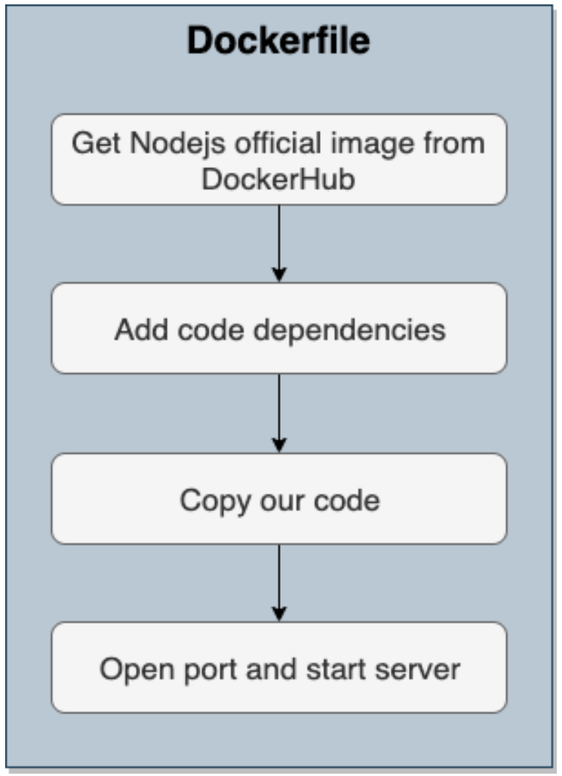


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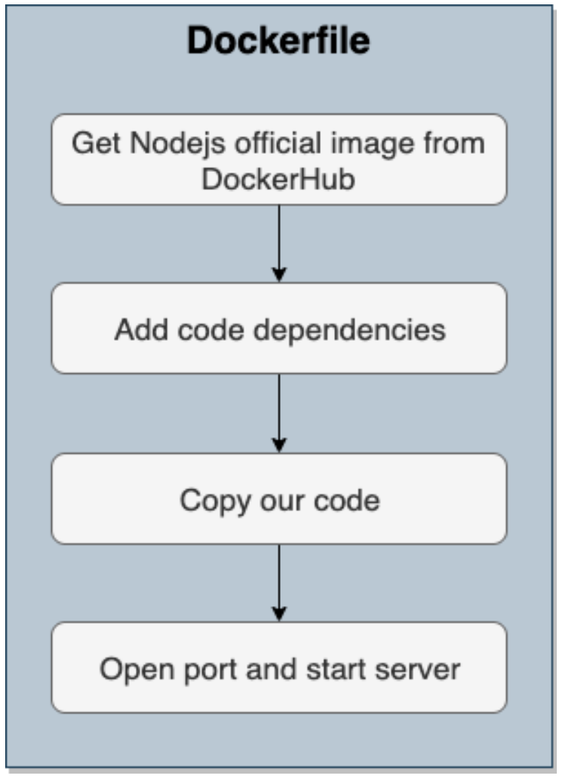


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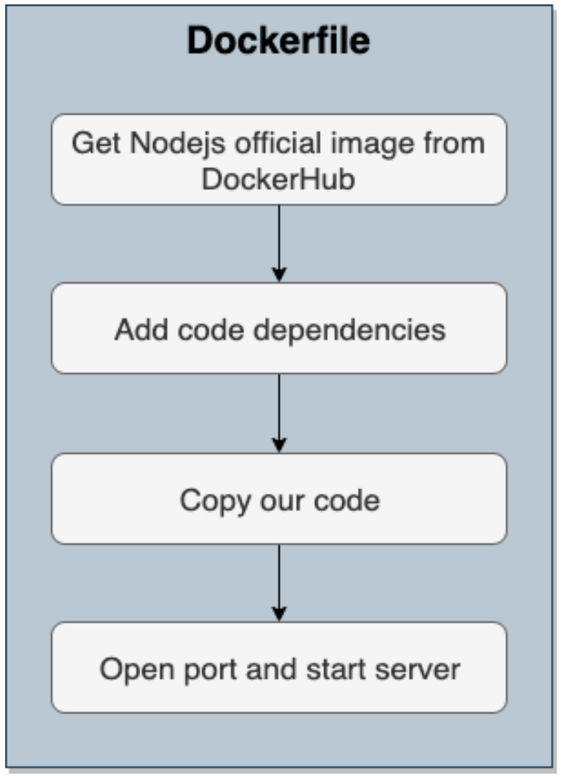


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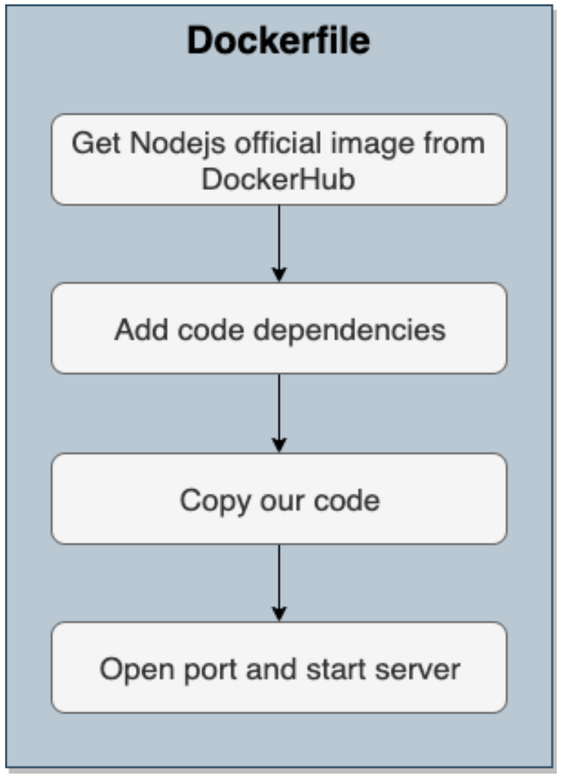


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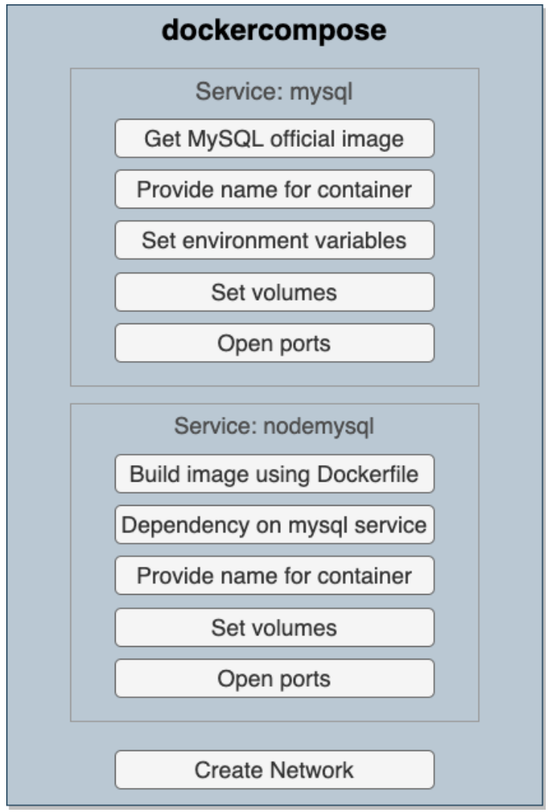


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version: "3.7"
services:
  mysql2:
    image: mysql
    container_name: mysql2
    env_file: docker-compose.env
    volumes:
      - ./mySqlDB:/var/lib/mysql
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    ports:
      - "3306:3306"
  nodemysql:
    build: ./nodeApp
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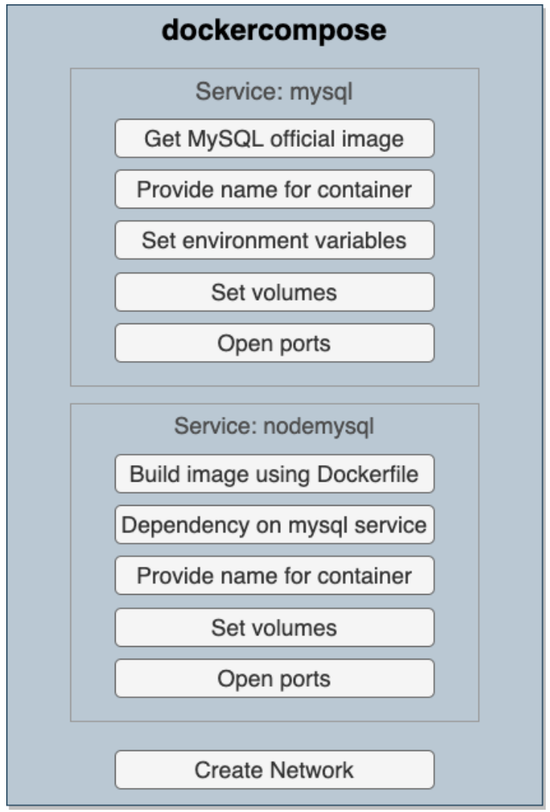


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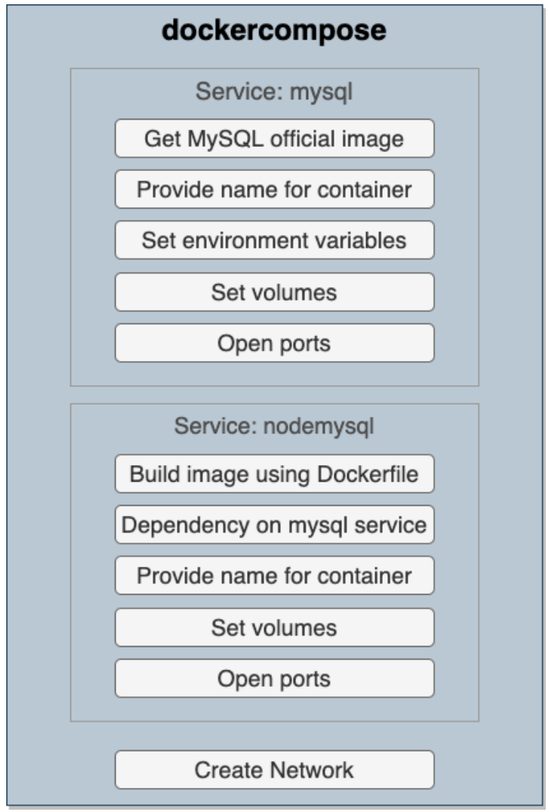


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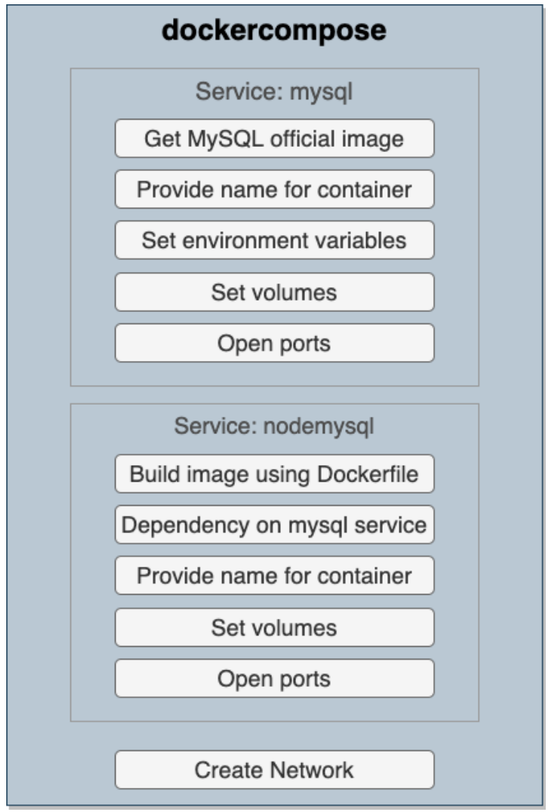


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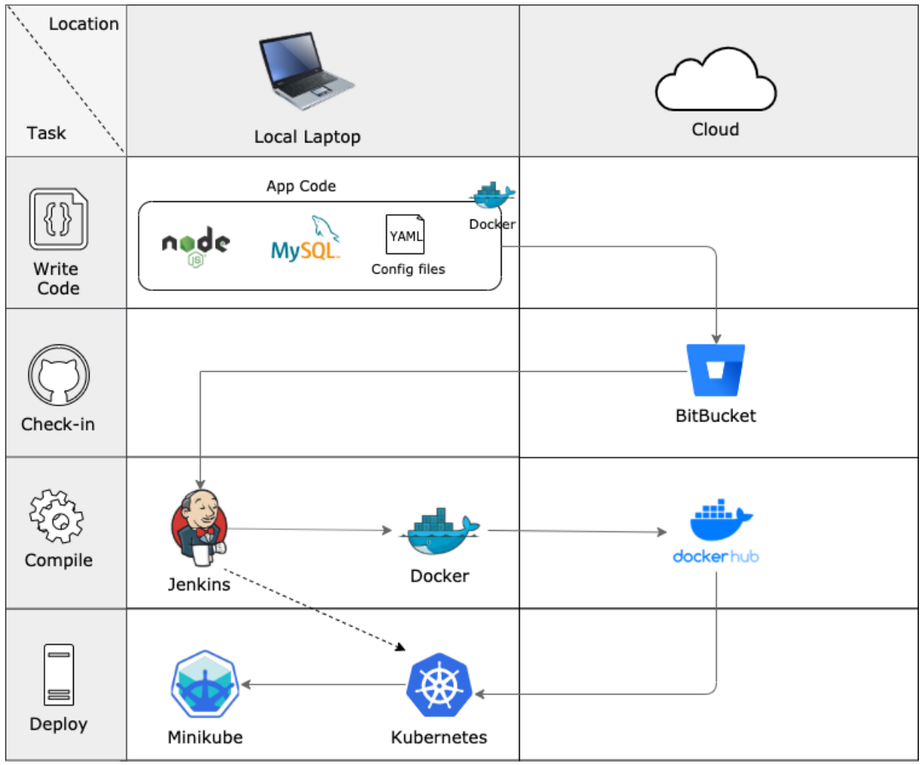
Dockercompose awesomeness

- Dockercompose contains everything needed for our app to run
- Brings up our containers & creates the appropriate network
- Can be checked in with the rest of our code

docker-compose file

Demo Roadmap

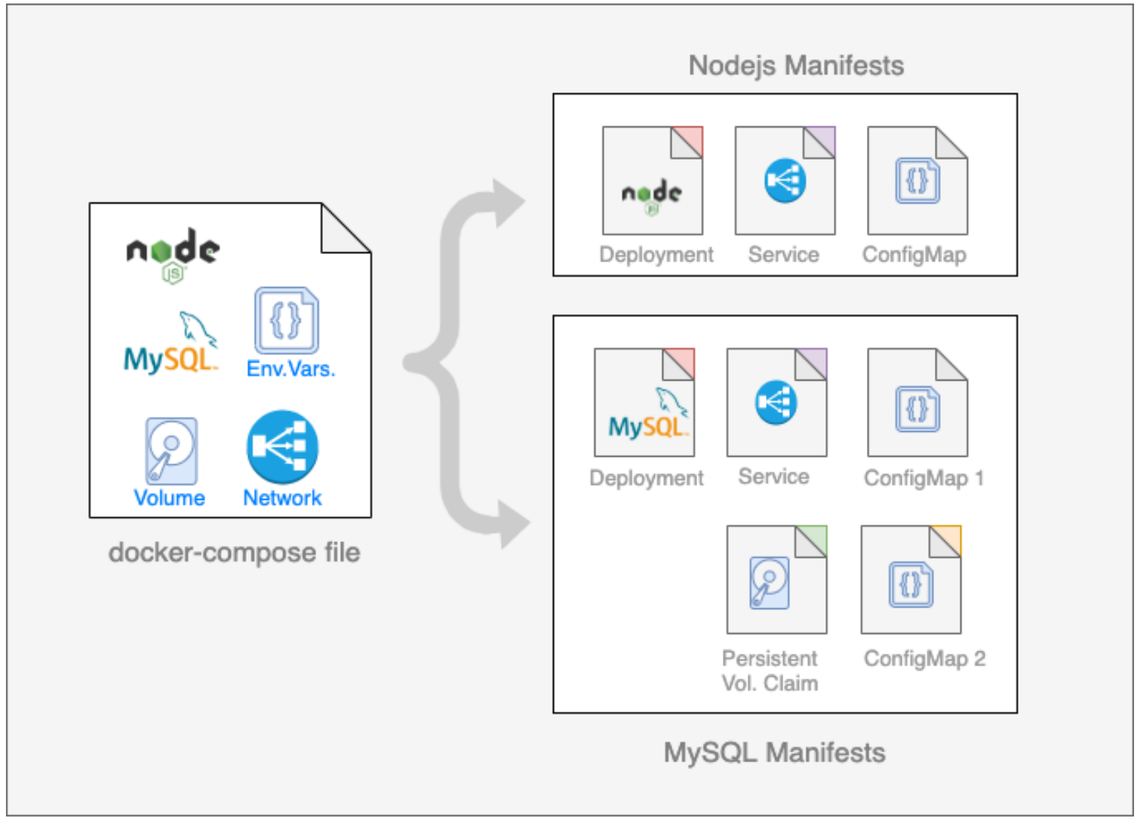


✔ Create docker images for our application

- Check in code to Bitbucket
- Use Jenkins to automate image build and deployment

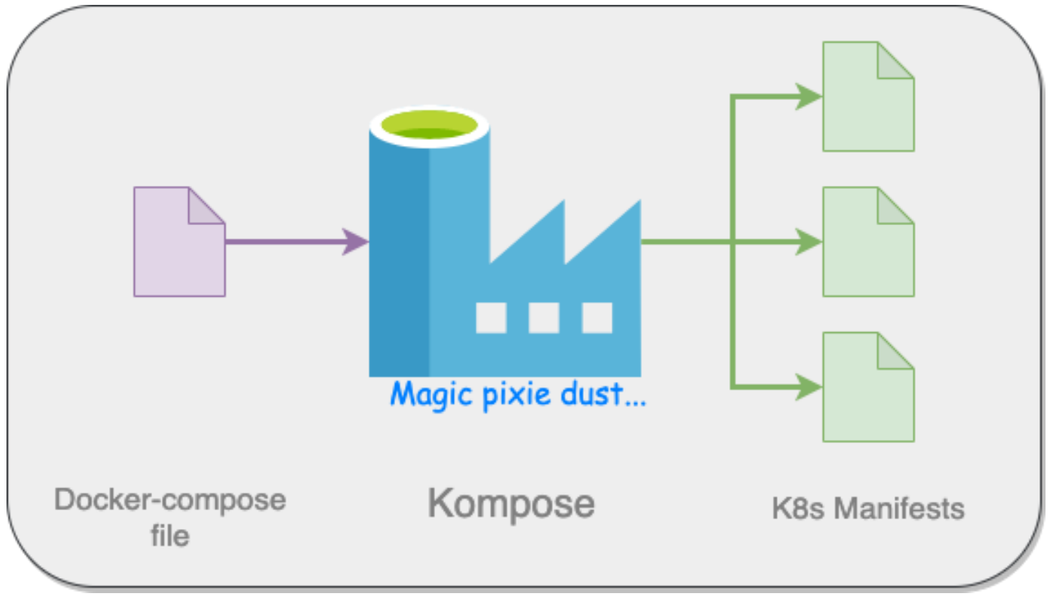
➡ Deploy to Kubernetes in Minikube

Kubernetes Manifests



- With Docker-compose we fully defined our application with two services (Nodejs and MySQL)
- For Kubernetes, we need to map those to multiple resource manifests:
  - Deployments
  - Services
  - Persistent Volumes
  - ConfigMaps

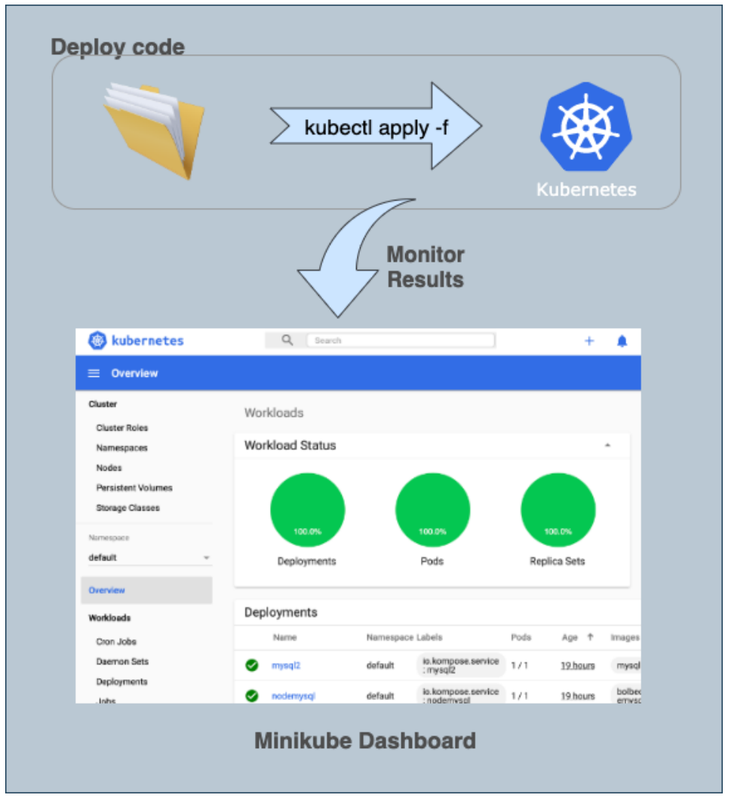
Creating Kubernetes Manifests



- Kompose generates manifests automagically! 😎
  - Based on dockercompose file
  - Out of the box, generation gets you 90% there
  - Run: `kompose -f <path_to_dokercompose_file> convert`
  - Get Kompose at kompose.io

Deploy to Kubernetes

- Use `Kubectl apply -f <filename or folder name>` to deploy our manifests
- Monitor cluster in the Minikube dashboard
- Or, use `kubectl get all` to see cluster resources
- Delete resources with `Kubectl delete -f <filename or folder name>`



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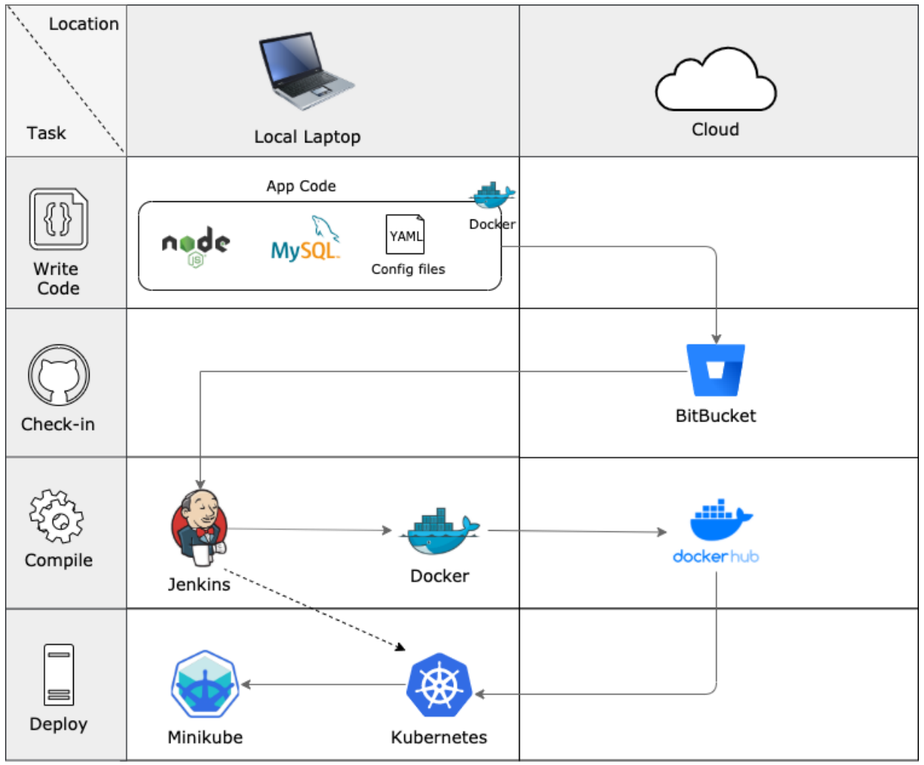

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Automating with Jenkins


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Kubectl on Jenkins image

Jenkins image does not come with kubectl, so we create an image that contains both

```
FROM jenkinsci/blueocean

USER root
RUN curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.16.2/bin/linux/amd64/kubectl
RUN chmod u+x kubectl && mv kubectl /bin/kubectl

COPY ./kubeconfig /root/.kube
COPY ./minikConfig  /root/.minikube
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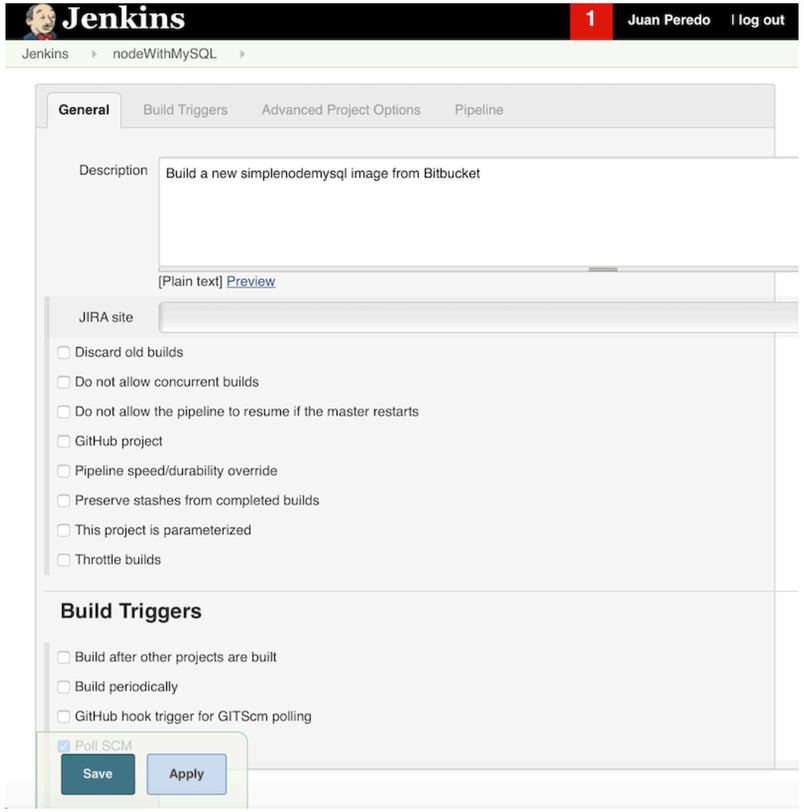
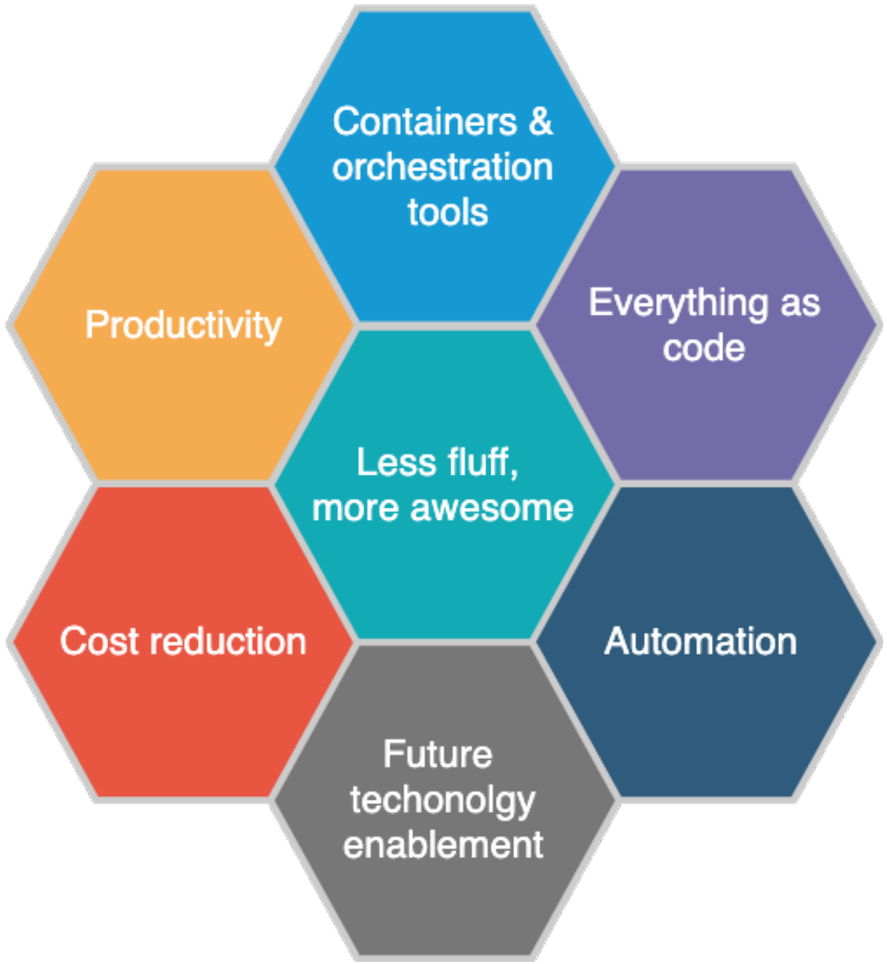
Register pipeline in Jenkins UI

- Add Docker Hub and Bitbucket credentials to Jenkins
- Create a new pipeline Job



Putting it all together...

Key take aways



More importantly …

We can spend more time with the ones we love

Questions ?

Thanks to CloudBees & all the conference sponsors

Simplifying your life with Docker, Jenkins and Minikube

Juan Peredo
linkedin.com/in/juanperedotech
@JuanPeredoTech

Appendix

Photos

-  Photo by Ferenc Almasi on Unsplash
-  Photo by Ben White on Unsplash
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