minikube start

a gentle introduction

kubecon : seattle 2018

Who are we?

Thomas Strömberg
@helixblue
GoogleContainerTools
minikube, kritis

Balint Pato
@balopat
GoogleContainerTools
minikube, skaffold, kaniko

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Goals

After this session you should be able to

- get started with minikube
- decide if minikube fits your use case
    - what are the supported features and customizations
    - other options
    - where minikube came from
    - where minikube is heading
- If this all sounds great and you want to contribute, come to the Deep Dive session too! Thursday 4:30 pm:D
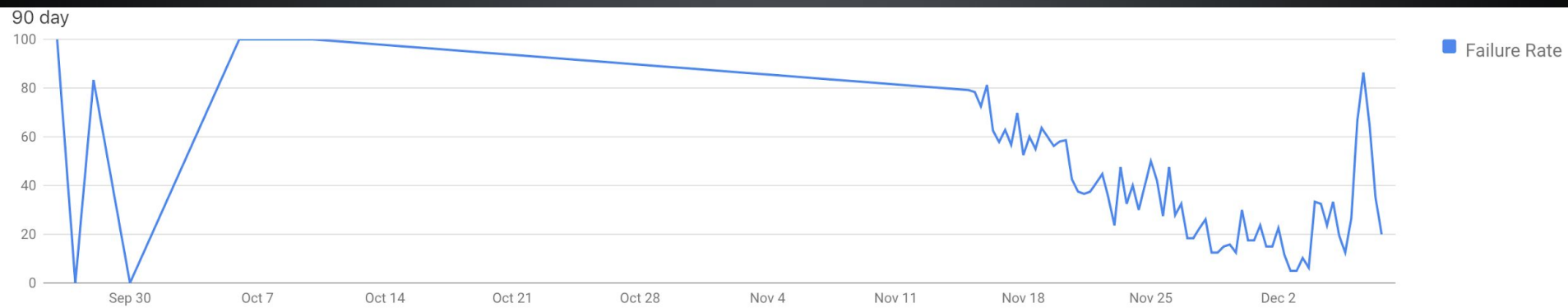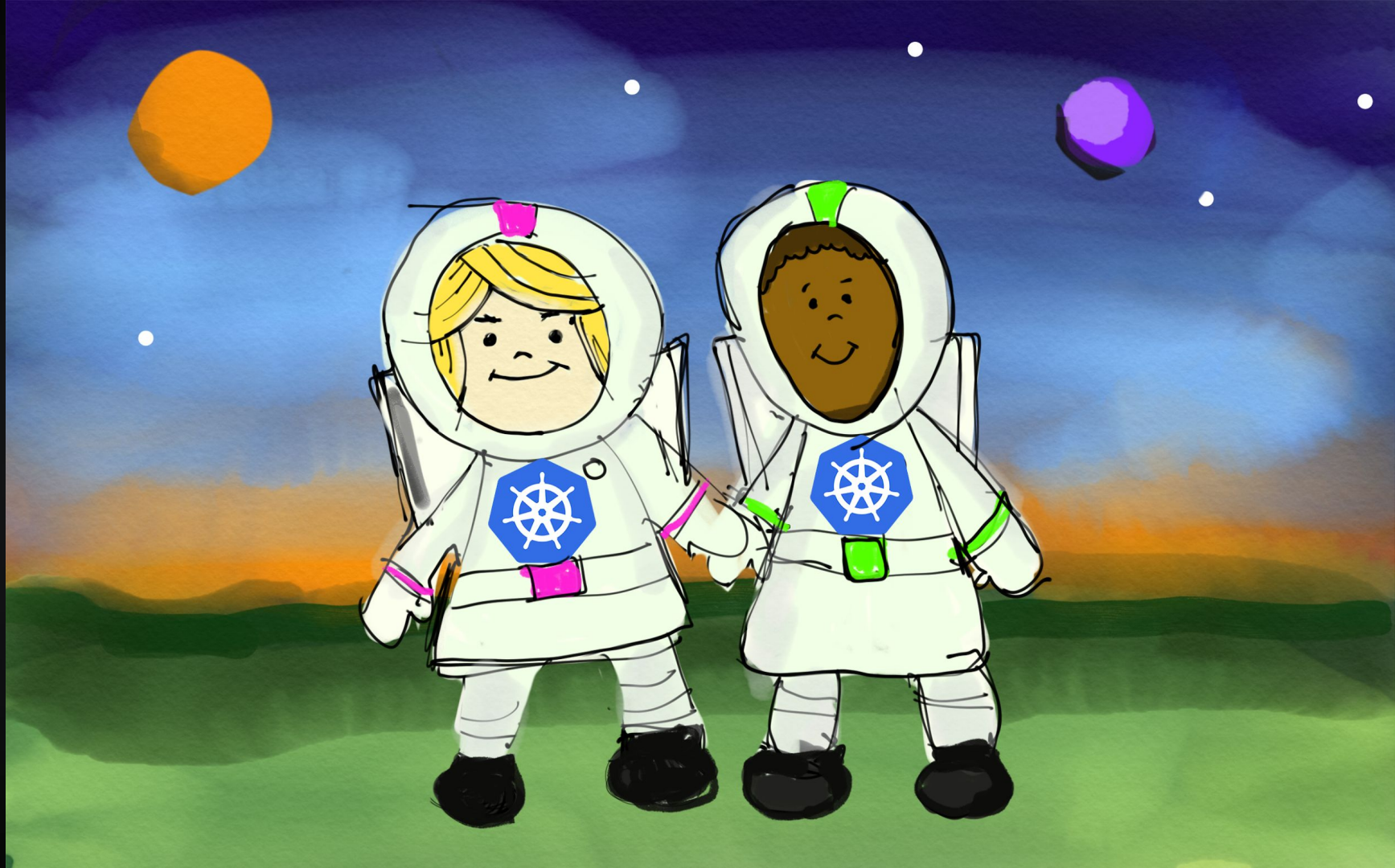
90 day

Failure Rate

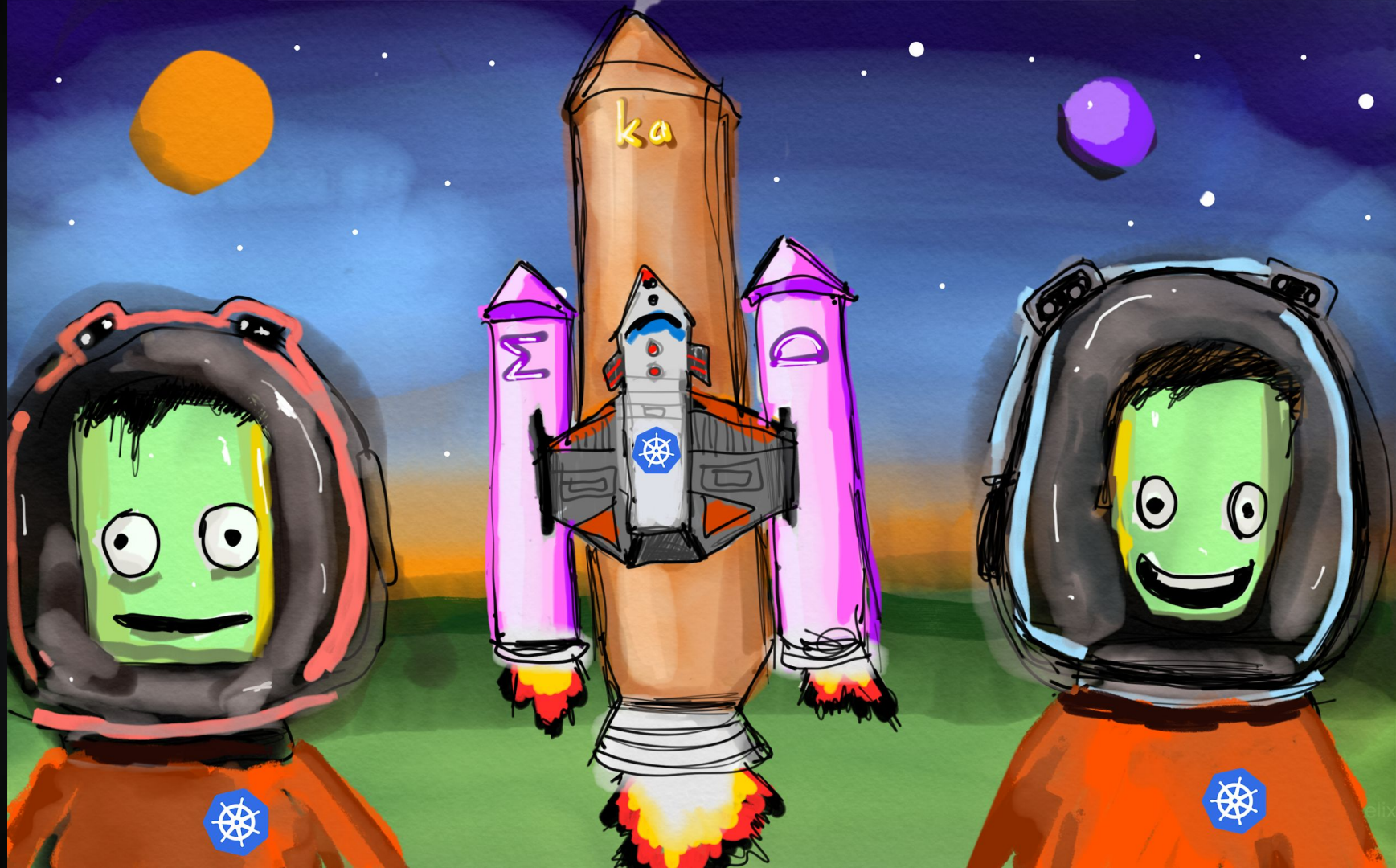minikube start: @balopat and @helixblue

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Minikube internals

Landscape

Superpowers + Kryptonite

blue

Demo

- `kubectl run nginx`
- `kubectx`
- `minikube dashboard`
- `quick skaffold demo`

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Design goals

- **Speed** for local development
- **Single command setup** and teardown
- Support **Kubernetes features that fit**
- **Unified UX** across OSes
- **Minimal** dependencies
- Becoming the de facto **local Kubernetes**

Reference: the original [design doc](#)

Why minikube? http://tinyurl.com/minik-survey

Other
9.5%

Education
19.0%

Testing
9.5%

Local Dev
61.9%

art: @balopat and @helixblue
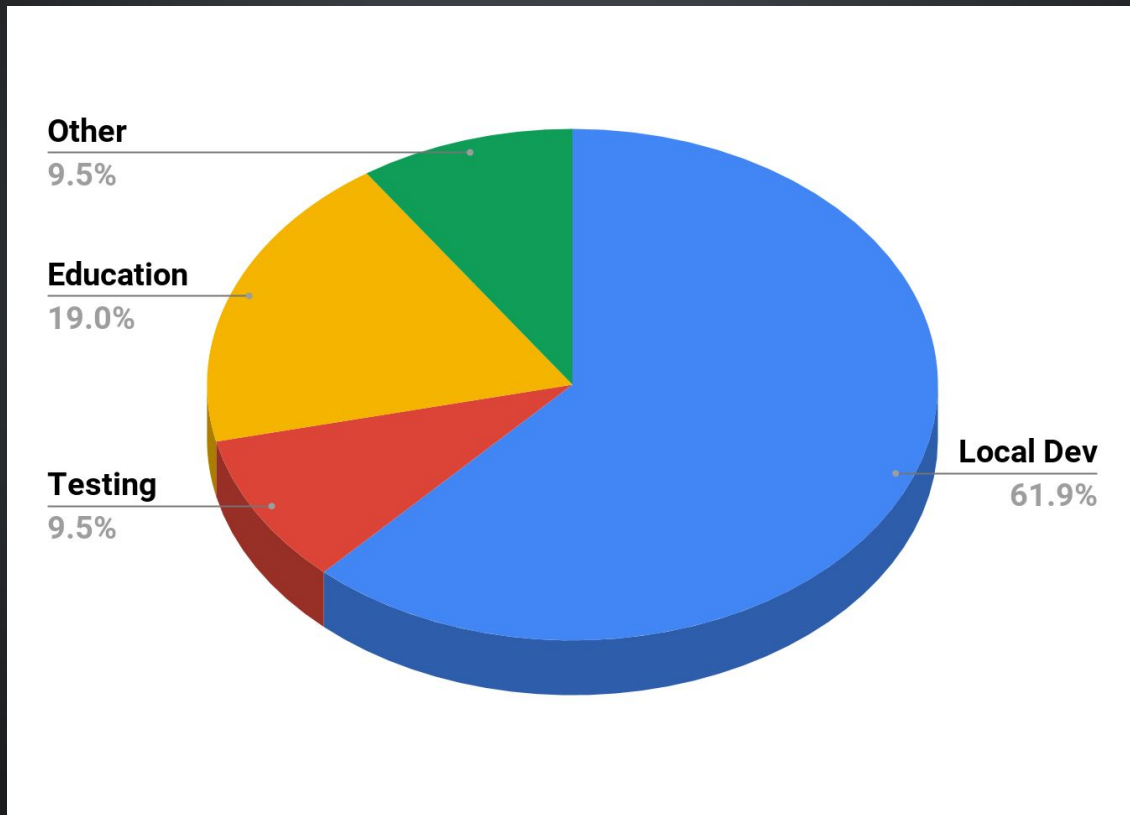
Kubernetes features that fit

NodePorts

Ingress

LoadBalancer *

DNS

Runtimes

Persistent Volumes

ConfigMaps

Secrets

Dashboard

RBAC

* *New!*

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Addons

"minikube addons enable <addon>"

- dashboard
- freshpod
- gvisor
- ingress
- metrics-server
- registry-creds
- storageclass

- coredns
- efk
- gpu
- heapster
- kube-dns
- registry
- storage-provisioner

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2018

- LoadBalancer emulation (minikube tunnel)
- Containerd and improved CRI-O support
- Experimental GPU support
- Improved mount: 9p, sshfs, and NFS
- Significantly improved reliability
- Switched upstream to machine-drivers (minishift collaboration)
- Retired localkube
- Added gVisor support

Under the hood

- `ps -afe | grep hyperkit`
- `kubectl get cs`
- `minikube ssh`
- `ps -afe | grep kubelet # schedulable`
- `toolbox`
- `eval $(minikube docker-env)`
- `docker ps`

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Kubernetes distros with dev/test focus

There are a lot of distros out

- [microK8s](https://ramitsurana.github.io/awesome-kubernetes/#installers) https://ramitsurana.github.io/awesome-kubernetes/#installers
    - Focus: local dev
    - Linux only
    - Isolation provided by snap
- Kubernetes in Docker Desktop
    - Focus: local dev
    - docker only backend
    - no multi-service type loadbalancer
    - Mac/Windows only

- KIND
    - focus: e2e testing of Kubernetes
    - docker based
- Minishift
    - Focus: openshift

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Kubernetes bootstrappers

- Kubeadm
  - Focus: node-by-node, standard k8s bootstrapping
- Kops
  - Focus: full lifecycle cluster management, including infrastructure
- Kubespray
  - Focus: ansible + kubeadm

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Minikube Superpowers

- Democratizing Kubernetes Development
  - Free! Open source!
  - Easier than rolling your own cluster
- Fast Iterative Development
  - Especially across Kubernetes versions
- No-Compromises Kubernetes
  - VM contains very little magic
- Cross Platform
- Easy to extend

Minikube Kryptonite

- Proxies, VPN's, Firewalls
- Production
- vm-driver=none outside of a VM
- Performance sensitive tasks
- Large resource footprints

2019

- A delightful out-of-the-box experience
  - Single step install
  - Stop asking people to delete ~/.minikube ☐
- Easy to debug
  - Early warnings for networking & config issues
  - No mysterious errors
- More inclusive
  - Maintainer diversity
  - The tool of choice for those without means or connectivity
- Efficient open source governance
  - Improved community outreach
  - Self sustaining project

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Questions?

Try it out!

- https://github.com/kubernetes/minikube

Where to go from here:

- http://slack.k8s.io #minikube
- https://github.com/kubernetes/minikube
- https://discuss.kubernetes.io/tags/minikube