

Managing a managed Kubernetes Platform

Annelies van 't Zand
Wien Sarup



KubeCon



CloudNativeCon

Europe 2020

Virtual

Introduction



Who are we?

What is NN?

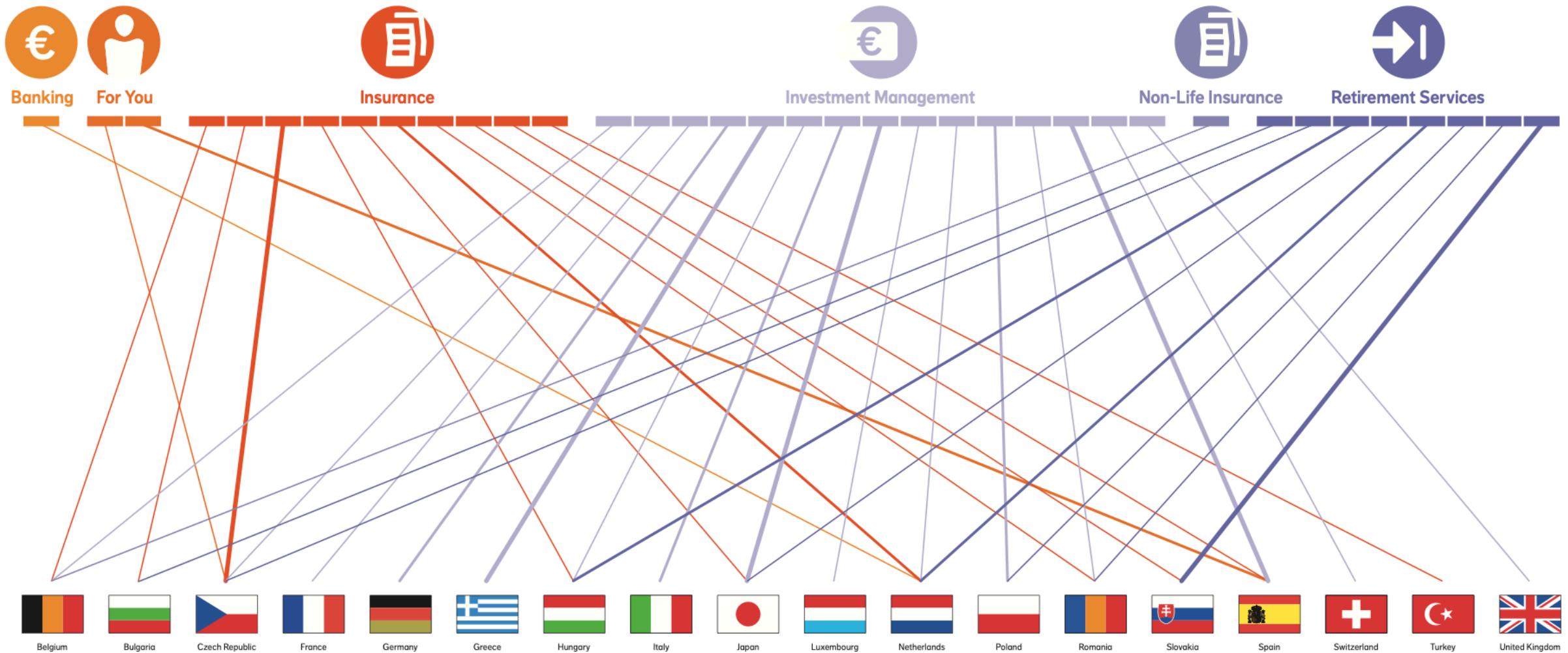
Container Platform team



Est. 2019
6 members
NN Cloud & Hosting



Our products and services in different countries



What is a platform?

- Running Container Workloads



Platform Capabilities

- Running Container Workloads
- Load-Balancing
- Security
- Monitoring and alerting
- Backups
- Logging
- Etc.



EFS Provisioner



Open Policy Agent



Prometheus



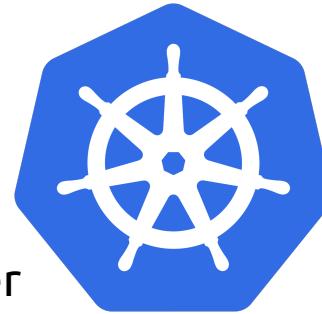
VELERO



KIAM



External-dns



splunk >
HEC



Kubernetes
Metrics Server



OPERATOR
SDK



NN Platform

The NN Container platform is an **opinionated** composition of infrastructure and (open-source) tools that provides a consistent **platform interface**, which we provide to our developers as a **managed** service.



Managing the managed NN container platform

Lifecycle Management



Testing



CI/CD



	aws-auth-ingress-controller	1.0.0	1.0.2
efs-provisioner		0.12.1	0.12.1
kiam		5.8.1	5.8.1
metrics-server		2.11.1	2.11.1
nn-controller		0.159.0	0.159.0
opa		1.13.6	1.14.0
private-external-dns		2 2 2	2 2 2

Lifecycle Management

Challenges and solutions



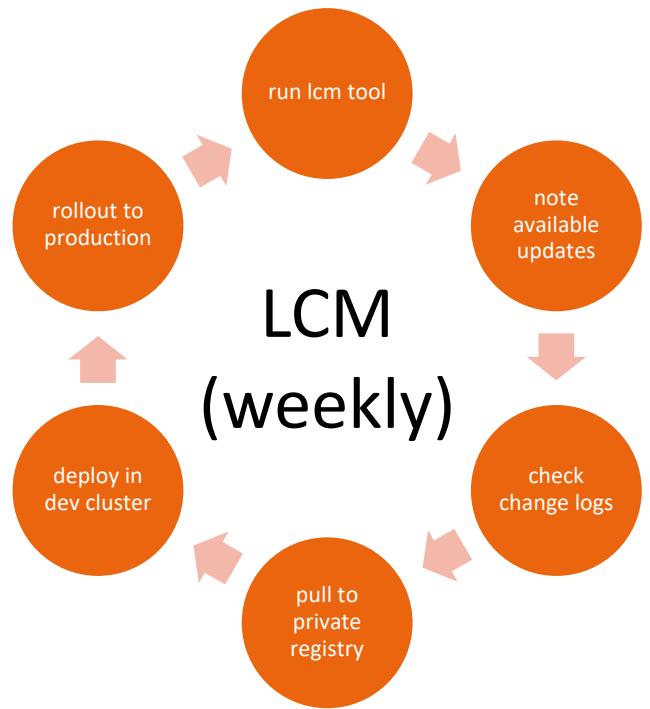
A way of life

Lifecycle Management: Challenges

- Keeping up with new releases
- A lot of components
- Private registries and remote repositories
- Vulnerabilities
- Upgrade Kubernetes/EKS
- Update our 'managed' nodes (EKS AMI)
- Update tooling



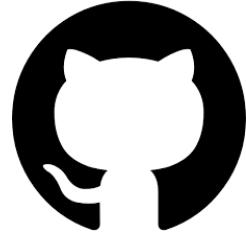
Lifecycle Management: Solutions



Vulnerability
Scanning



Test new releases



Fix Upstream



CIS Benchmarks™

Github: Kubernetes platform lifecycle management

Life Cycle Management dashboard

Status: Done
Last run: 22:36:42 19-12-2019

Images

Image	Current Version	Latest Version	Vulnerabilities
alpine	3.10.1	3.10.3	0
calico/node	v3.8.1	v3.11.0	0
coredns	1.4.0	1.4.0	0
falcosecurity/falco	0.15.3	0.18.0	28

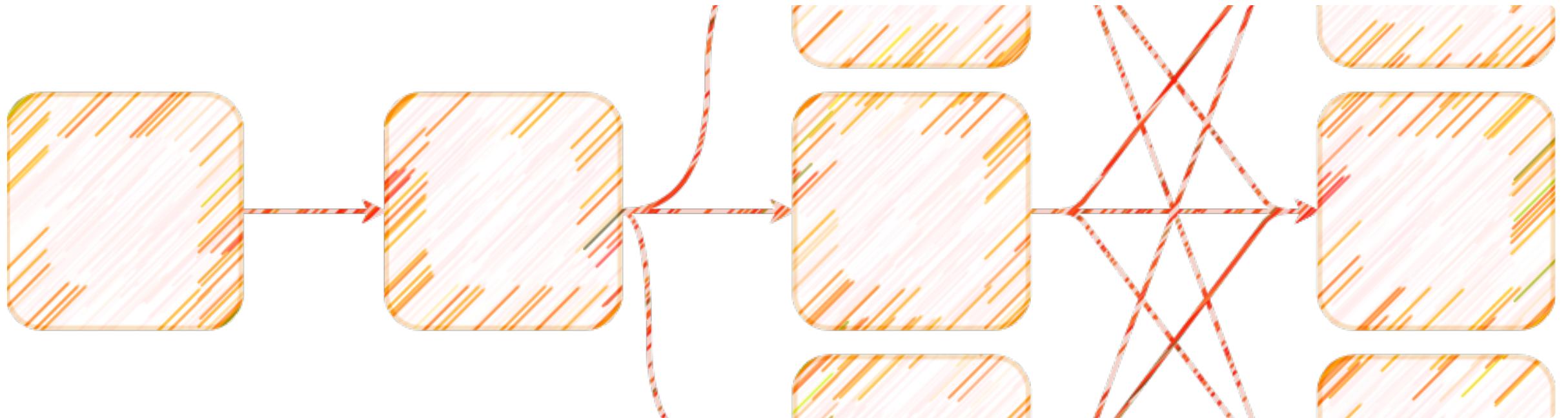
Charts

Chart	Current Version	Latest Version
efs-provisioner	0.8.0	0.8.0
velero	2.5.0	2.7.3

Tools

Tool	Current Version	Latest Version
hashicorp/terraform	0.11.14	v0.12.18

<https://github.com/arminc/k8s-platform-lcm>



CI/CD

Challenges and solutions

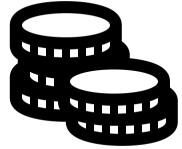


Pipelines, pipelines and pipelines

CI/CD: Challenges



Large scale



Infrastructure
costs

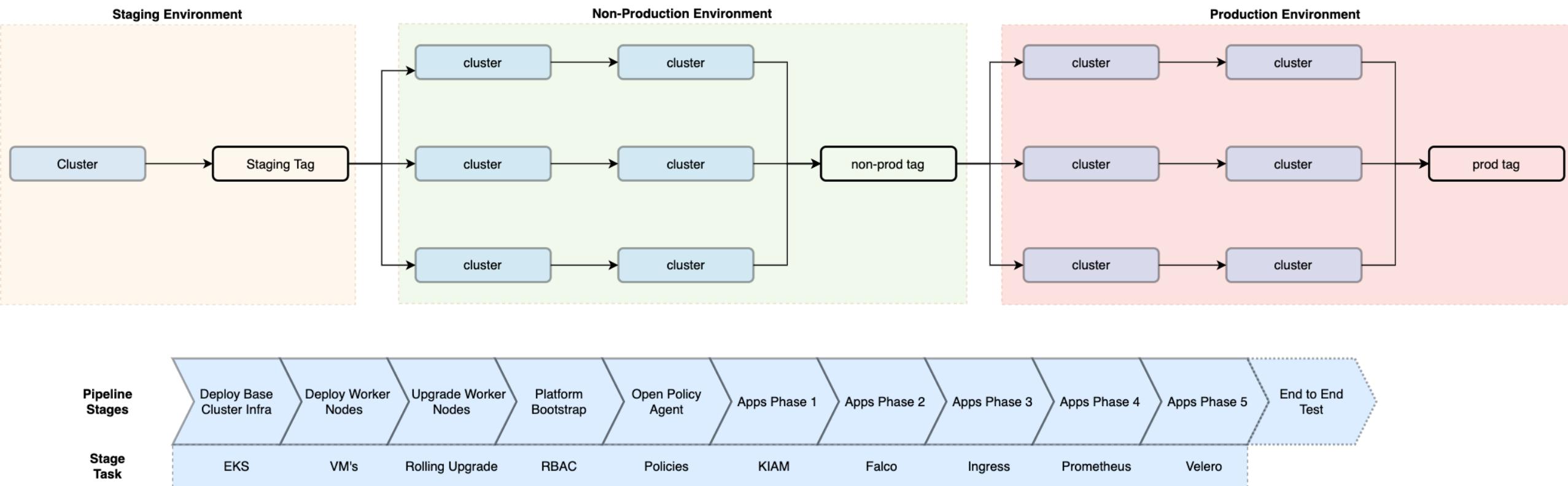


Reliability

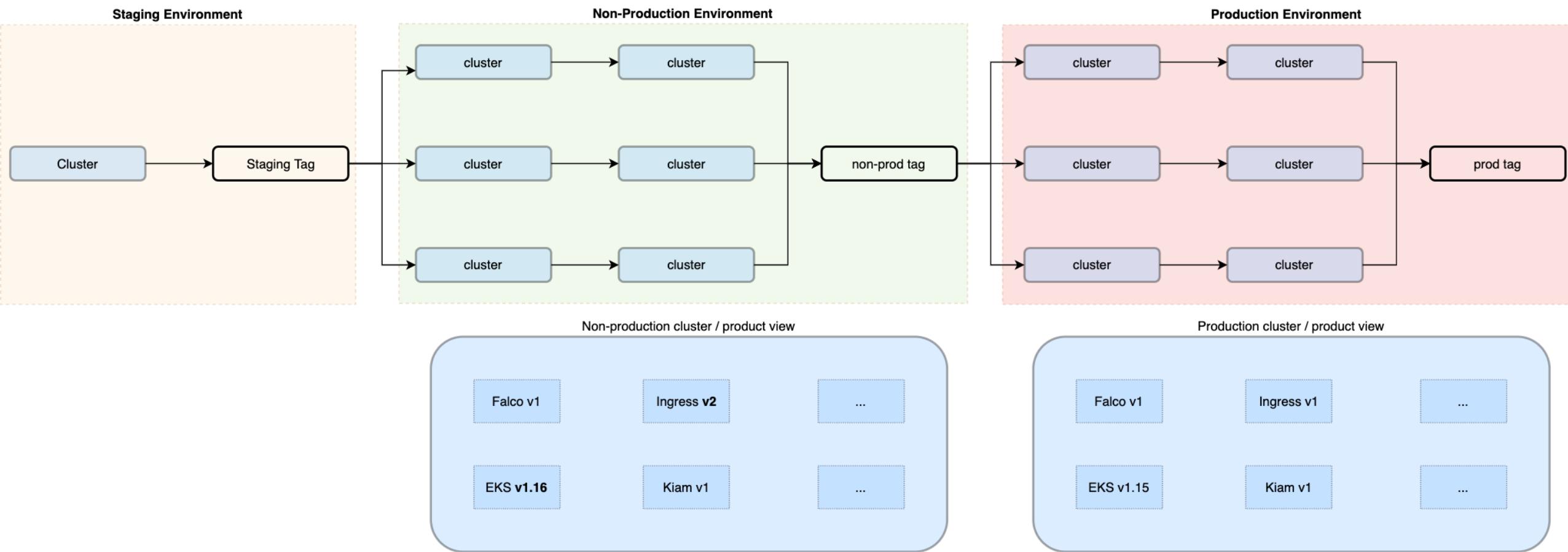


Duration

CI/CD: Our setup



CI/CD: Feature flagging



```
root@ip-172-31-10-10:~/data$ ./runtests.py test_nncontroller.py::test_nodegroup_success
plugins: dependency-0.5.1, mock-1.11.2
collecting ...
collecting 26 items
collected 26 items / 4 deselected / 22 selected

nn-controller.py::test_nodegroup_success
----- live log setup -----
11:09:56 INFO Swapping assume policy of config-admin and creating contexts
11:09:56 INFO Found credentials in shared credentials file: ~/aws/credentials
```

Testing

Challenges and solutions



Test, test, test

Testing: Challenges

- “unit testing”
- Integration testing
- Complicated and time consuming
- Integration between cloud provider and k8s

```
apiVersion: controller.nn.nl/v1alpha1
kind: NodeGroup
metadata:
  name: develop
spec:
  size: 3
  type: t3.large
  shared: true
```

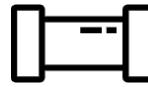
Testing: Solutions



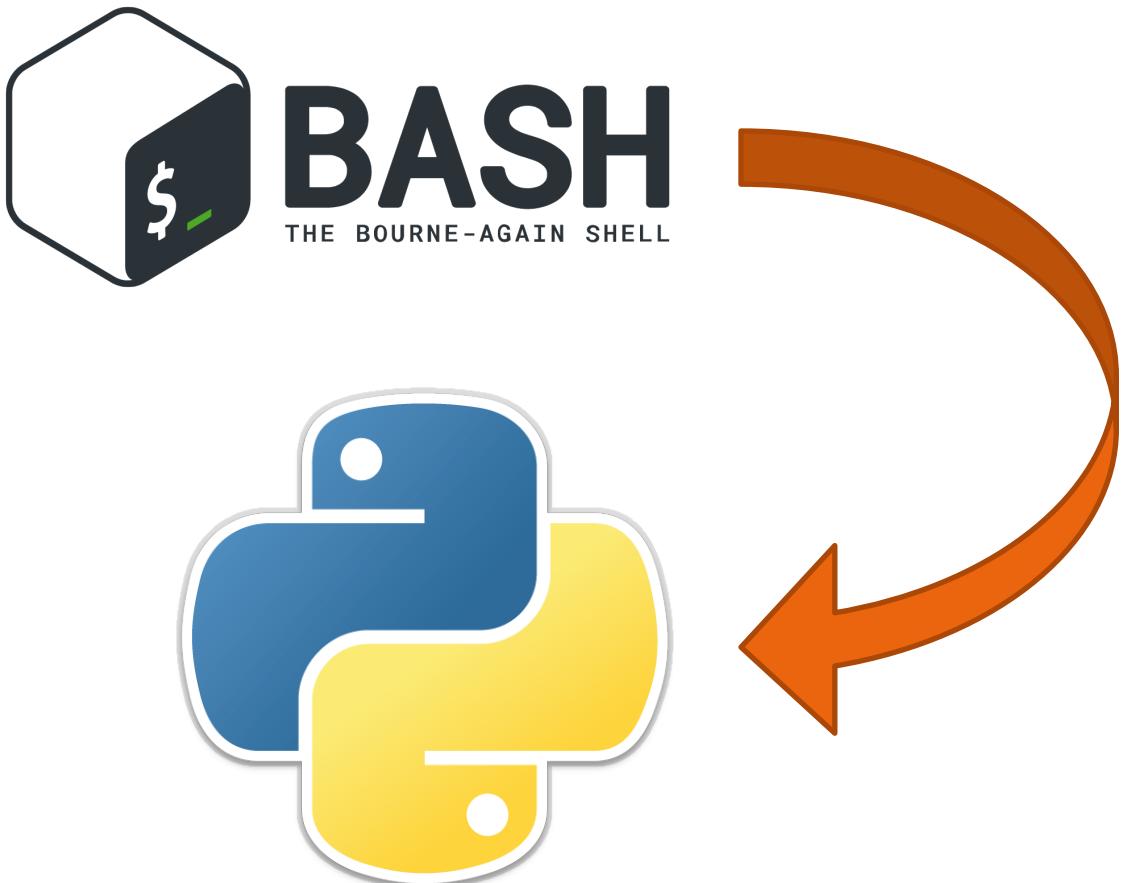
Testing framework



Take time to write proper tests



Customer example project



What's next?



Smart Cloud
Agnostic



Everyone on board



Maturity

Information

- Visit our digital booth: NN
- <https://www.nn-group.com/>

- Contact us

Annегиес: Antonis.van.t.Zand@nn.nl

Виендер: Wiender.Sarup@nn-group.com

