Building Helm Charts

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Helm Chart Structure

Helm Chart Structure

Helm Chart – Dependencies

```
chart-demo
├── charts
│   └── mongodb-7.8.4.tgz
├── Chart.yaml
├── requirements.yaml
├── templates
│   ├── deployment.yaml
│   ├── _helpers.tpl
│   ├── ingress.yaml
│   ├── NOTES.txt
│   └── service.yaml
└── values.yaml
```

Helm Chart - Documentation

```
chart-demo
├── Chart.yaml
├── LICENSE
├── README.md
├── templates
│       ├── deployment.yaml
│       ├── _helpers.tpl
│       ├── ingress.yaml
│       ├── NOTES.txt
│       └── service.yaml
├── values.schema.json
└── values.yaml
```

Helm Chart

```
chart-demo
├── charts
│   └── mongodb-7.8.4.tgz
├── Chart.yaml
├── crds
├── LICENSE
├── README.md
├── requirements.yaml
├── templates
│   ├── deployment.yaml
│   ├── _helpers.tpl
│   ├── ingress.yaml
│   ├── NOTES.txt
│   ├── service.yaml
│   └── tests
│       └── test-connection.yaml
├── values.schema.json
└── values.yaml
```
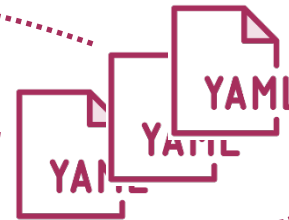
Chart.yaml

Chart.ya
ml

```yaml
apiVersion: v2
name: chart-demo
description: A Helm chart for Kubernetes
keywords:
    - demo
type: application
appVersion: 1.16.0
version: 0.1.0
dependencies:

    ...
```

Major, Minor, Patch
(SemVer 2.0)

Demo

Building Guestbook Helm Chart

GuestBook Application: First Version

✓ **Pod**
✓ **Service**
✓ **Ingress**

Frontend

http://github.com/phcollignon/helm3/
lab5_helm_chart_version1

Building Guestbook Chart

Helm Concepts

Helm Release

Chart

```
chart
├── Chart.yaml
└── templates
    ├── frontend-service.yaml
    ├── frontend.yaml
    └── ingress.yaml
```

Helm

Kubernetes Cluster

Release

Helm Release

Release Revision

Chart

```
chart
├── Chart.yaml
│   templates
│   ├── frontend-service.yaml
│   ├── frontend.yaml
│   └── ingress.yaml
```

Helm

Kubernetes Cluster

Release

Release revision

Chart Version

Kubernetes Cluster

Helm

Chart

Release

```
chart
├── Chart.yaml
└── templates
    ├── frontend-service.yaml
    ├── frontend.yaml
    ├── ingress.yaml
    ├── service-account.yaml
    └── volume.yaml
```
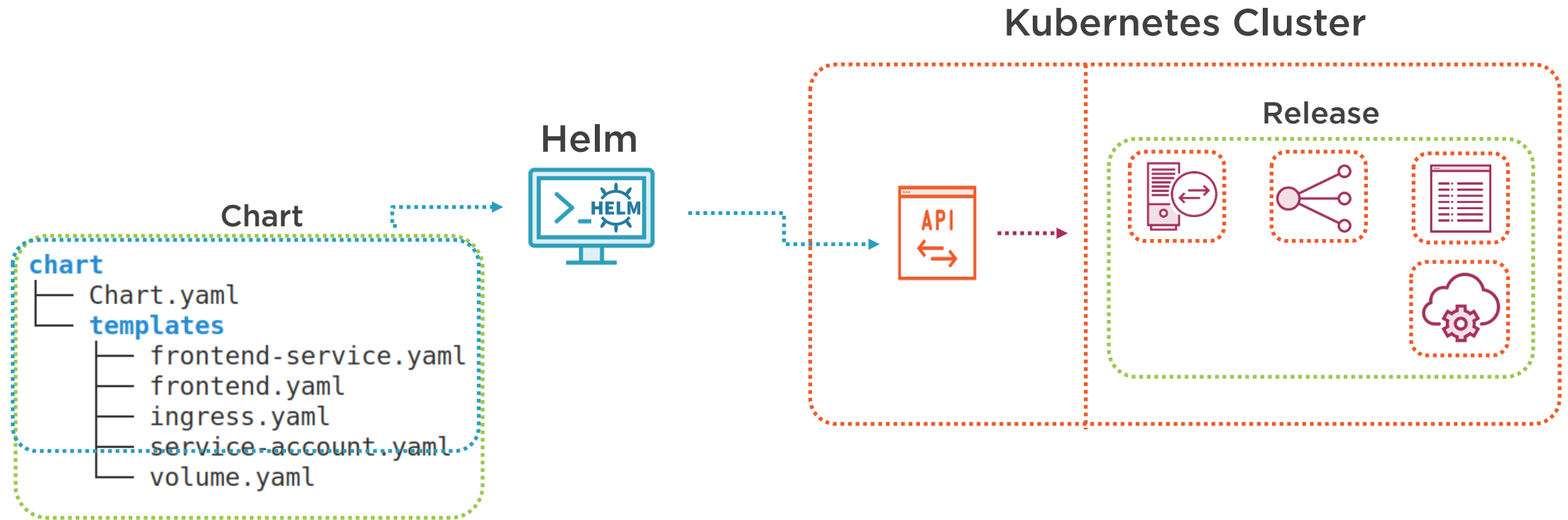
HELM

API
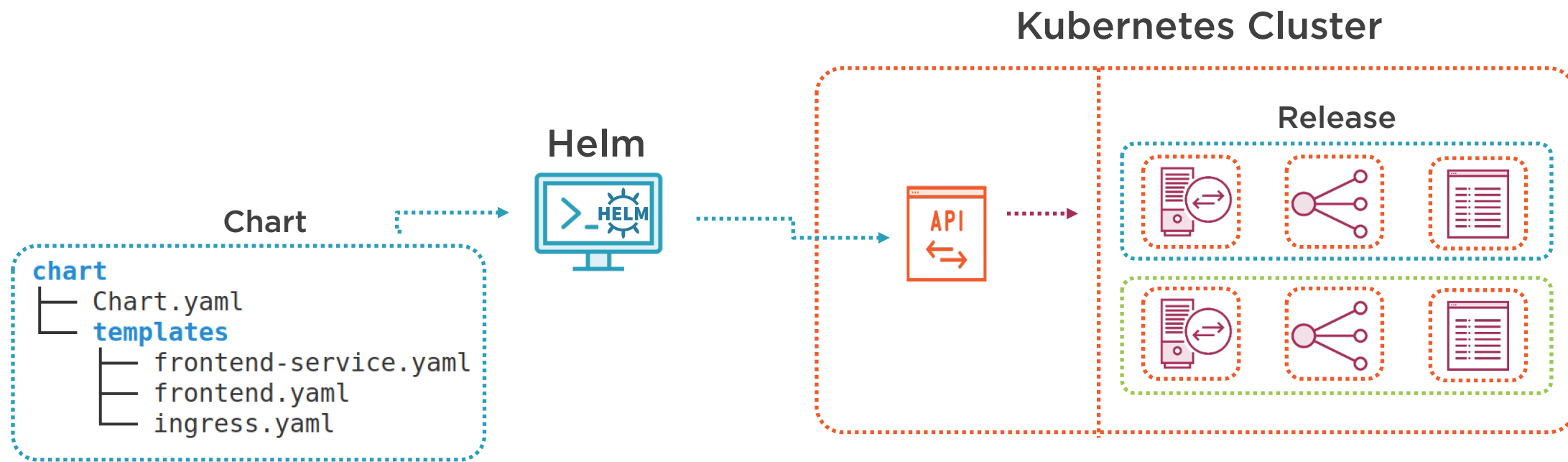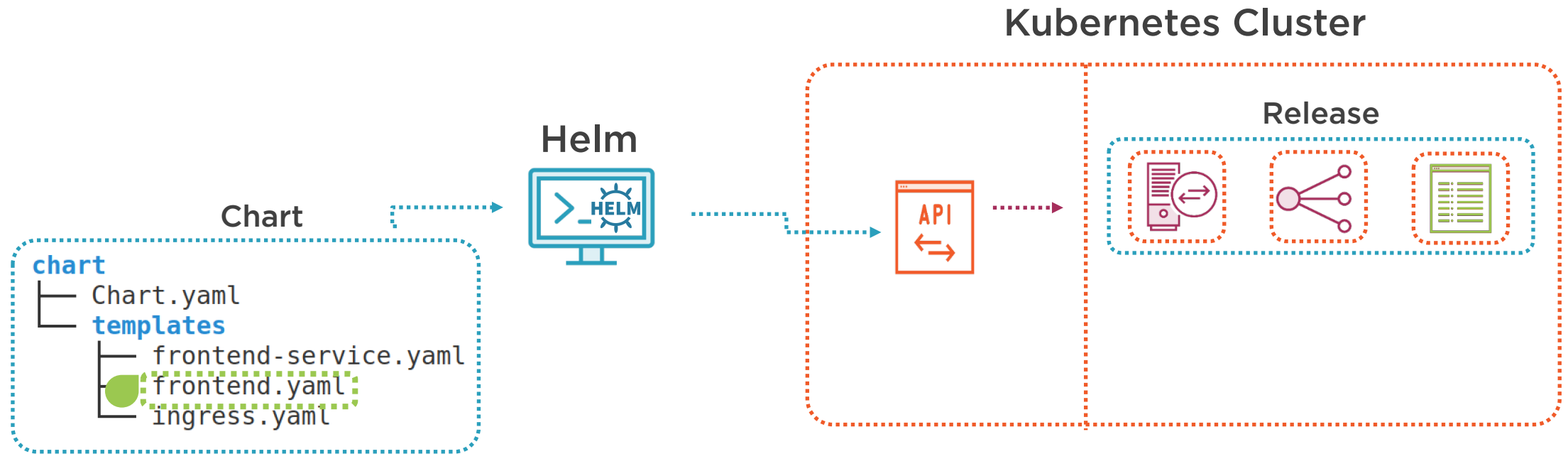
Chart version

Chart: definition

Release: instance

Application version

Chart version

Release revision

Helm Concepts

Helm Commands

Action	Command
Install a Release	`helm install [release] [chart]`
Upgrade a Release revision	`helm upgrade [release] [chart]`
Rollback to a Release revision	`helm rollback [release] [revision]`
Print Release history	`helm history [release]`
Display Release status	`helm status [release]`
Show details of a release	`helm get all [release]`
Uninstall a Release	`helm uninstall [release]`
List Releases	`helm list`

Helm 2 vs Helm 3

Helm 2	Helm 3
helm install --name [release] [chart]	helm install [release] [chart]
helm install [chart]	helm install --generate-name [chart]
helm delete --purge [release]	helm uninstall [release]
helm delete [release]	helm uninstall --keep-history [release]
helm get [release]	helm get all [release]

Updating Guestbook Release

Chart

```
guestbook
├── Chart.yaml
├── templates
│   ├── frontend-service.yaml
│   ├── frontend.yaml
│   └── ingress.yaml
```

Helm

HELM

Kubernetes Cluster

API
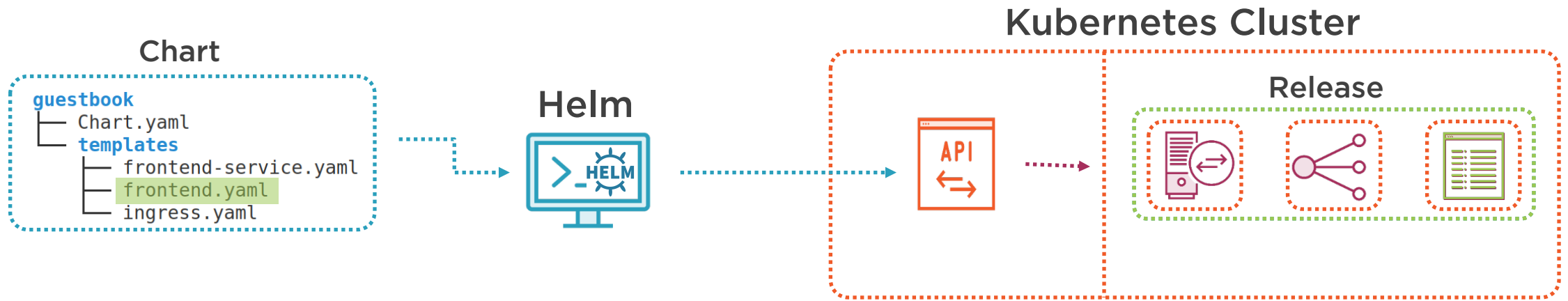
Release

http://github.com/phcollignon/helm3/
lab5_helm_chart_version1

Demo

Upgrading Release to version 2.0

Building an Umbrella Chart

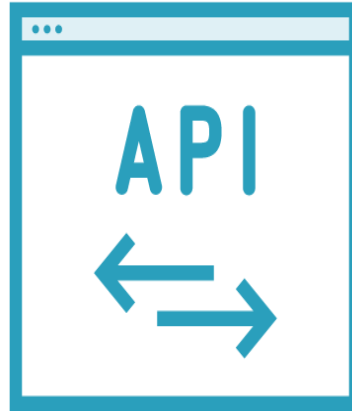# GuestBook Application: Second Version

Frontend
- ✓ ConfigMap
- ✓ Pod
- ✓ Service
- ✓ Ingress

Backend API
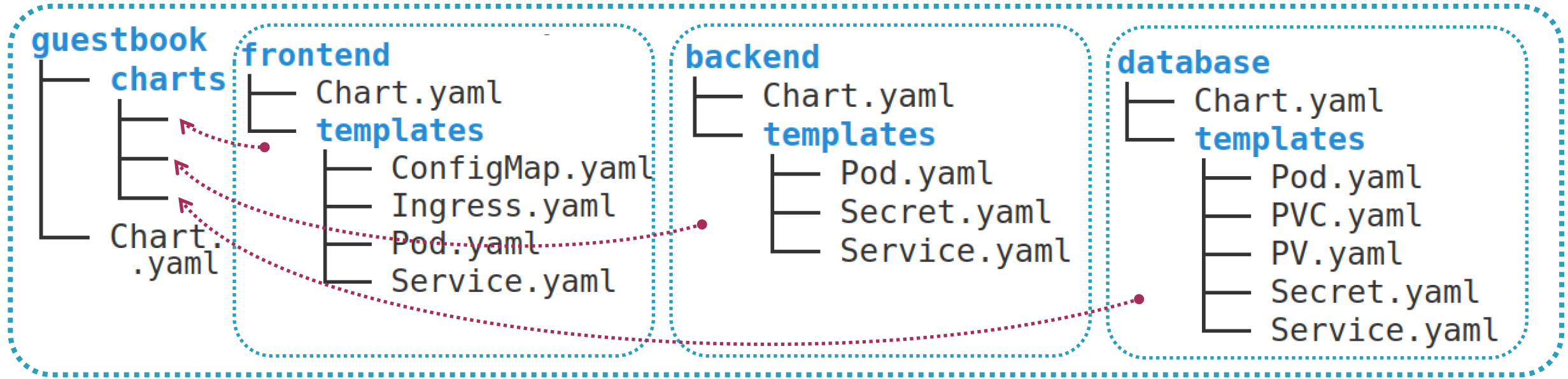
API

- ✓ Secret
- ✓ Pod
- ✓ Service

Database
- ✓ Secret
- ✓ PV
- ✓ PVC
- ✓ Pod
- ✓ Service

http://github.com/phcollignon/helm3/lab6_helm_chart_version2

Building Guestbook Umbrella Chart

```
guestbook
│   frontend
├── charts        ├── Chart.yaml
│   │             │   templates
│   │             ├── ConfigMap.yaml
│   │             │   ├── Ingress.yaml
│   │             │   ├── Pod.yaml
│   Chart.        │   └── Service.yaml
│   .yaml
```

```
backend
├── Chart.yaml
│   templates
├── Pod.yaml
├── Secret.yaml
└── Service.yaml
```

```
database
├── Chart.yaml
│   templates
├── Pod.yaml
├── PVC.yaml
├── PV.yaml
├── Secret.yaml
└── Service.yaml
```

Summary

Chart structure

Building a Chart

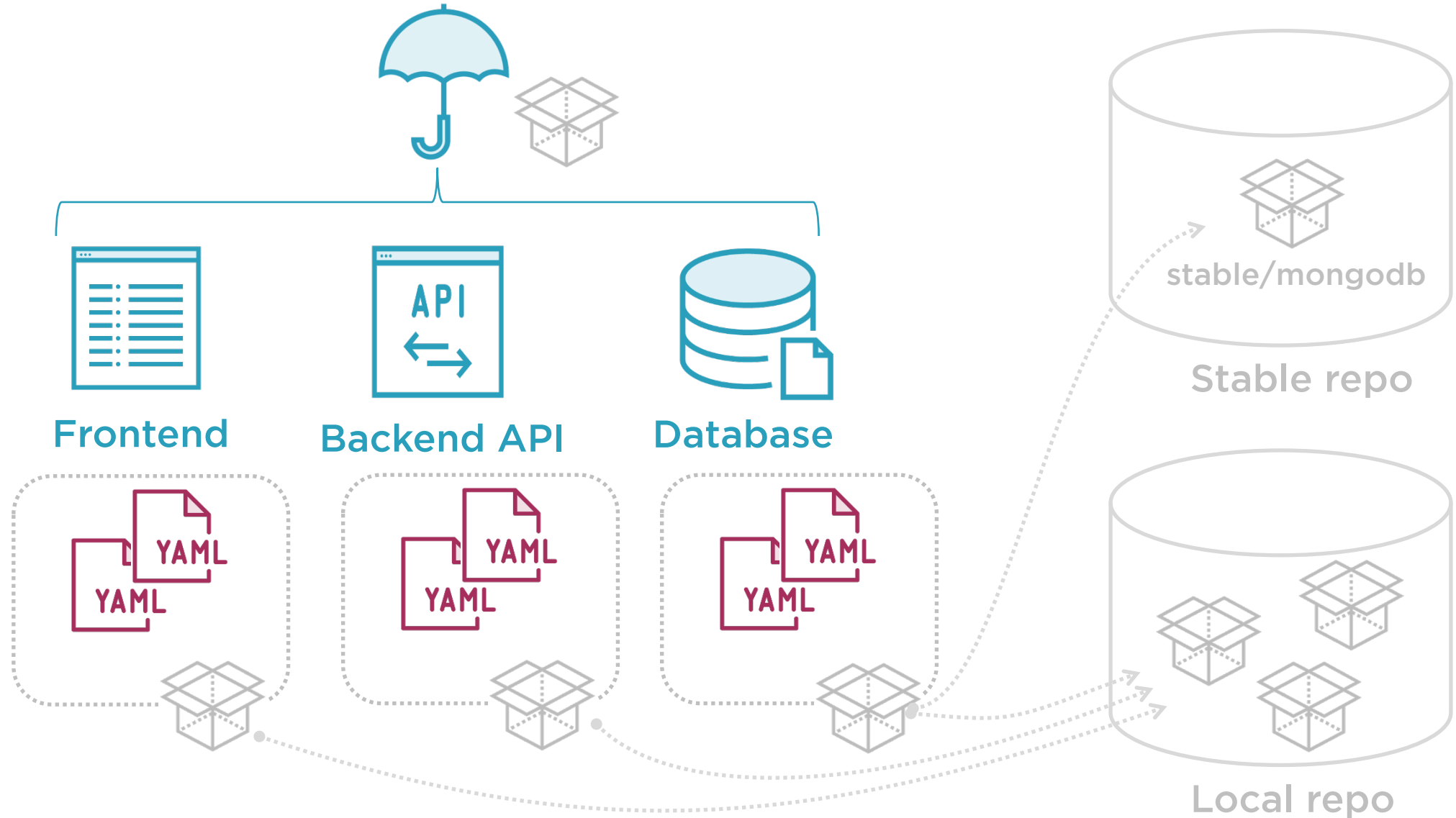**Helm concepts:**

Release
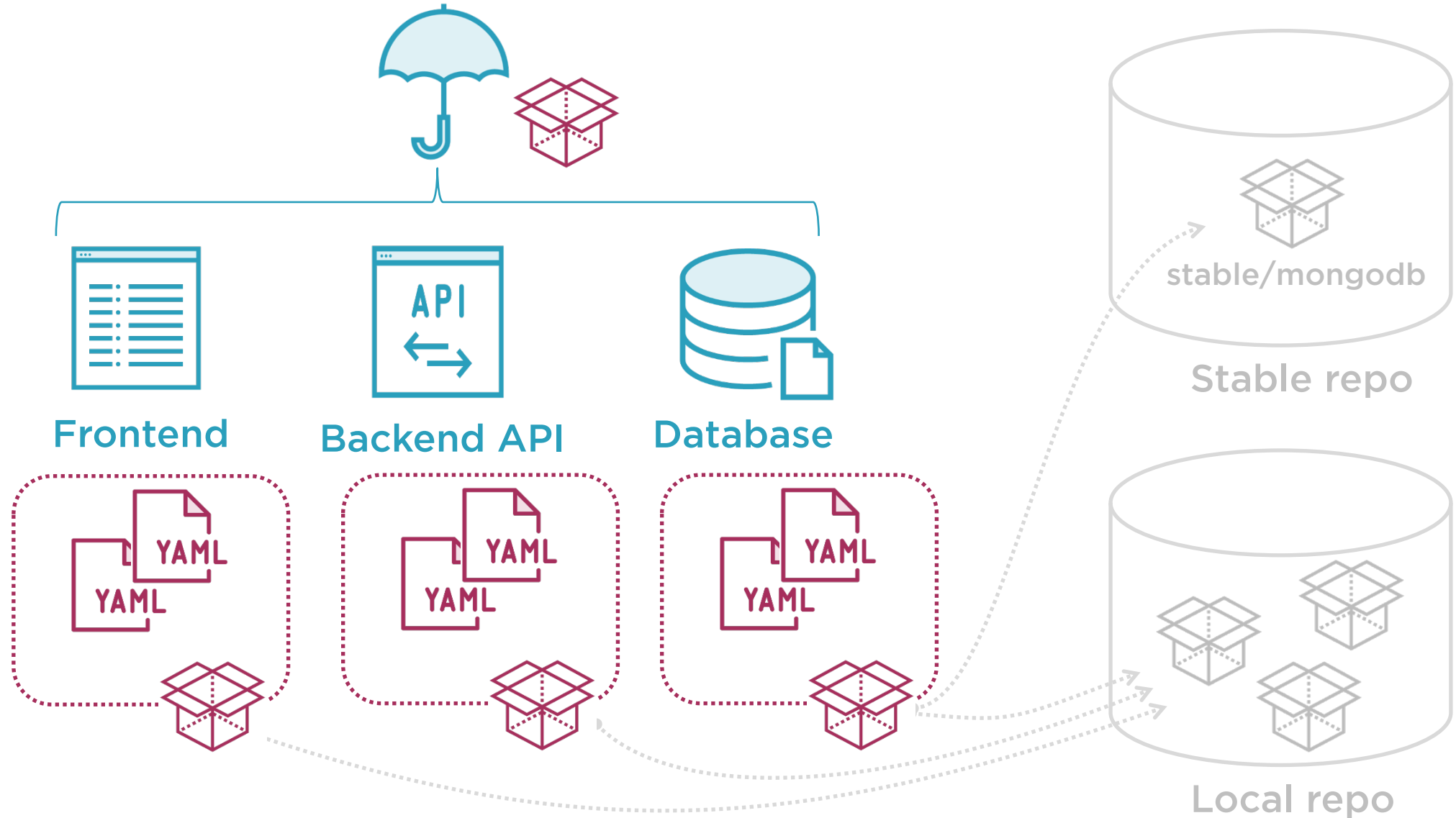
Revision

Chart version

Helm commands

Install, Upgrade, Rollback and Delete application with Helm

Guestbook Application

Guestbook Application

Guestbook Application