

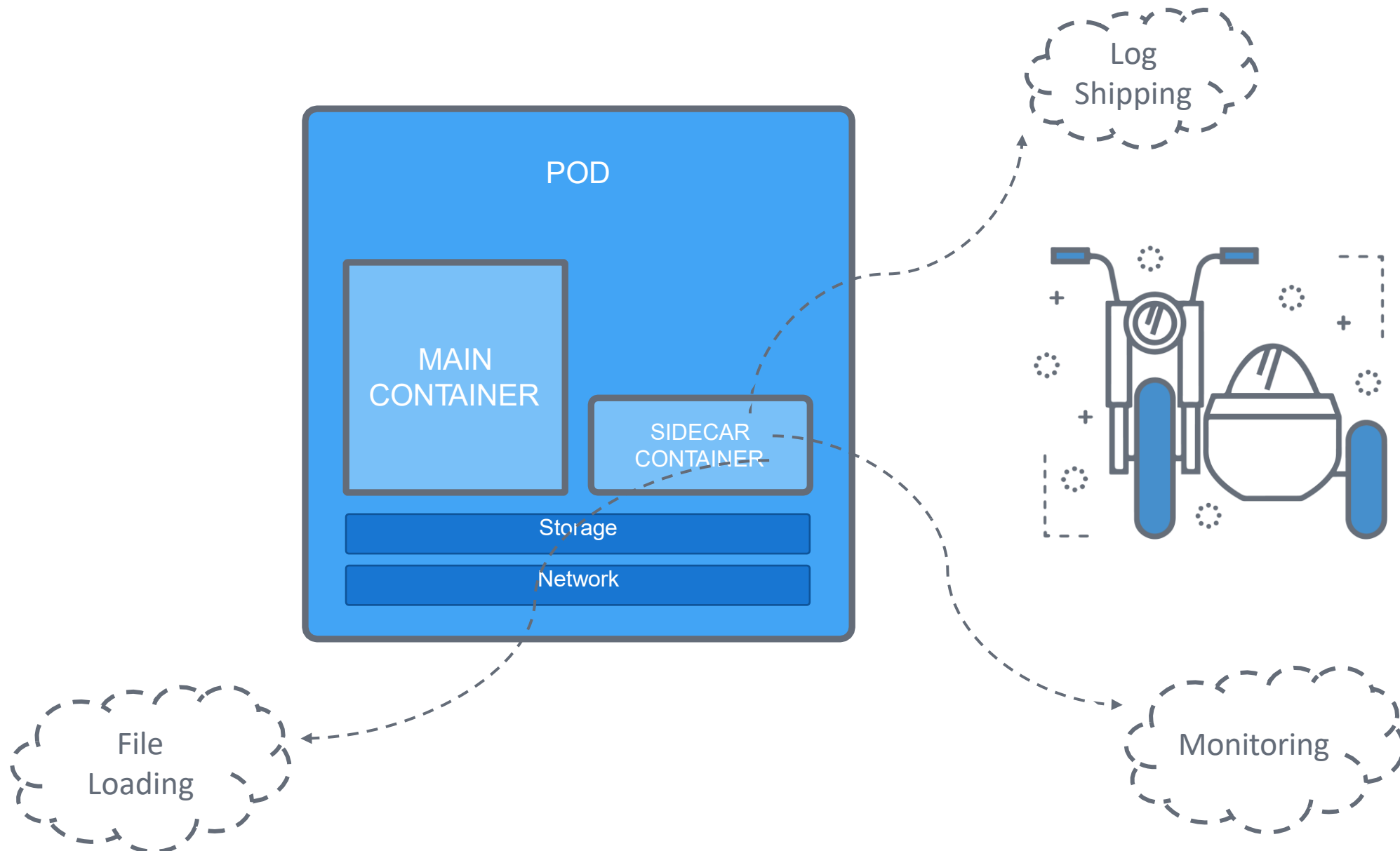


{K}ODE{K}LOUD

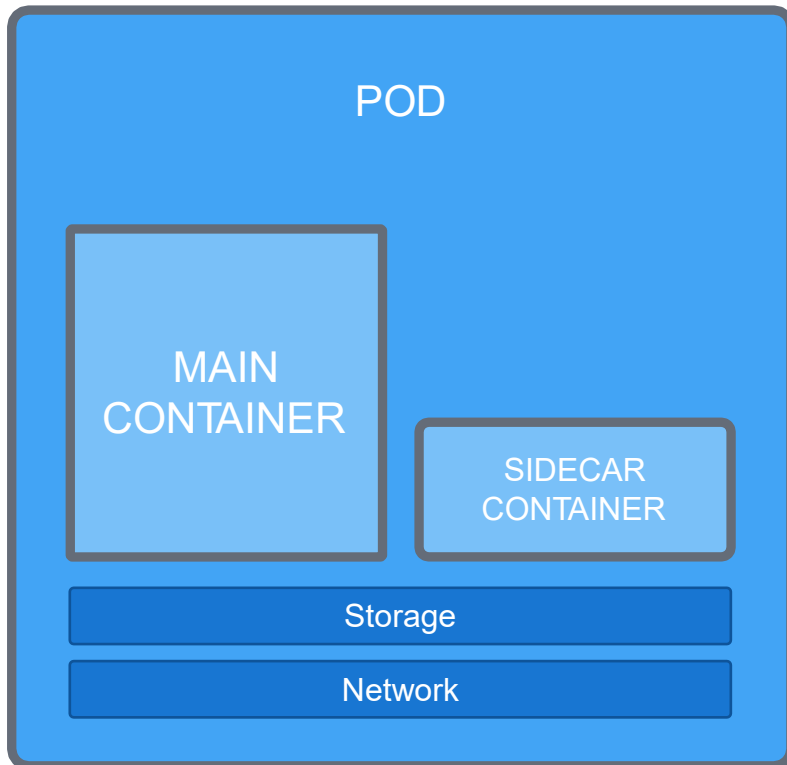
SIDECARS



Sidecars



Sidecars



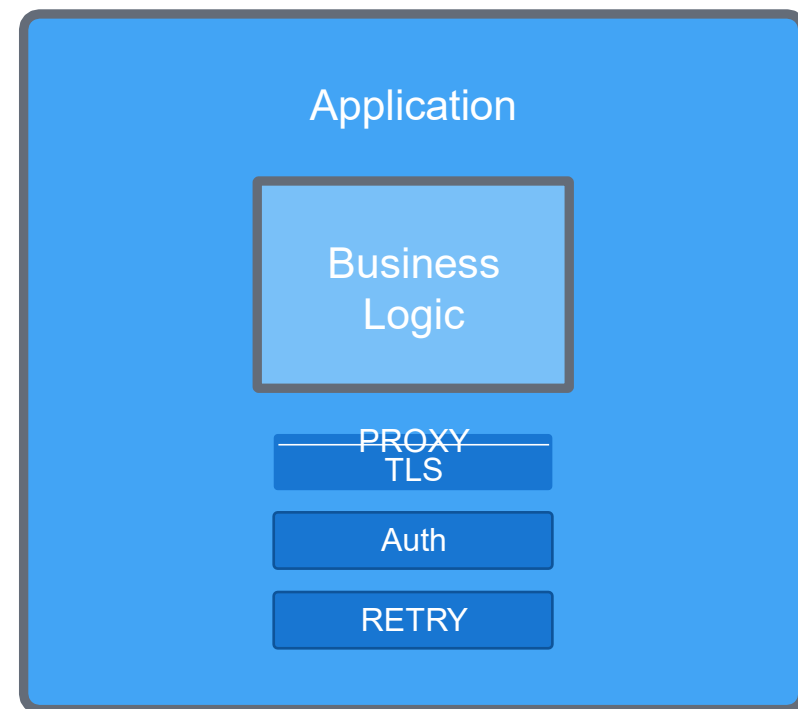
pod.yaml

```
containers:
- name: nginx-container
  image: nginx
  volumeMounts:
  - name: shared-data
    mountPath: /usr/share/nginx/html
- name: sidecar-container
  image: fluent/fluentd
  volumeMounts:
  - name: shared-data
    mountPath: /pod-data
```

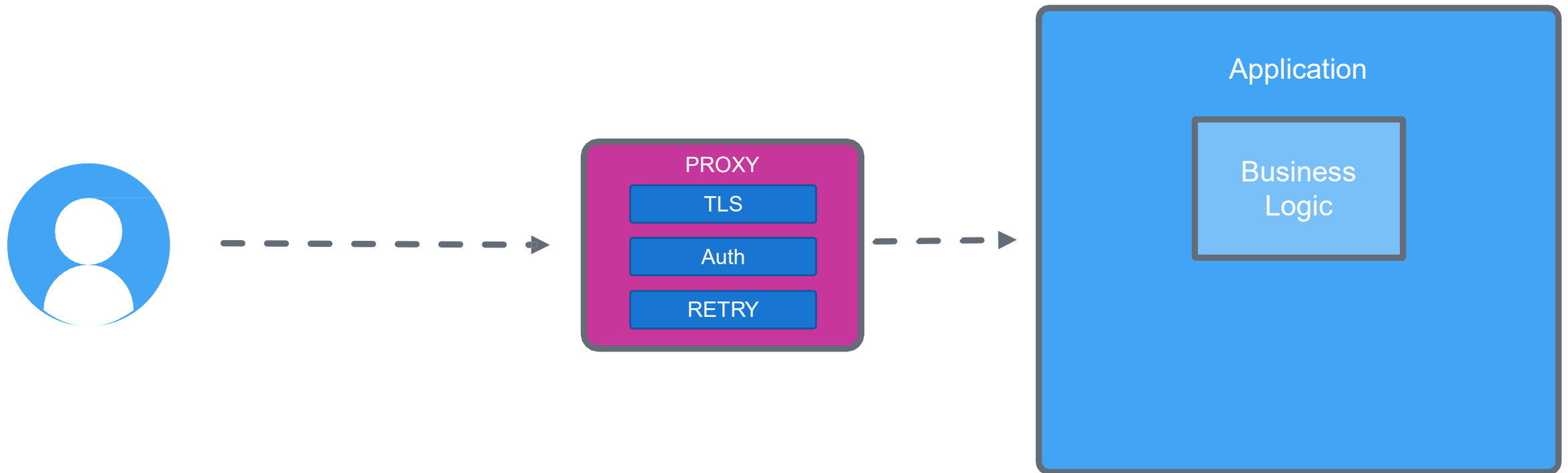
ENVOY

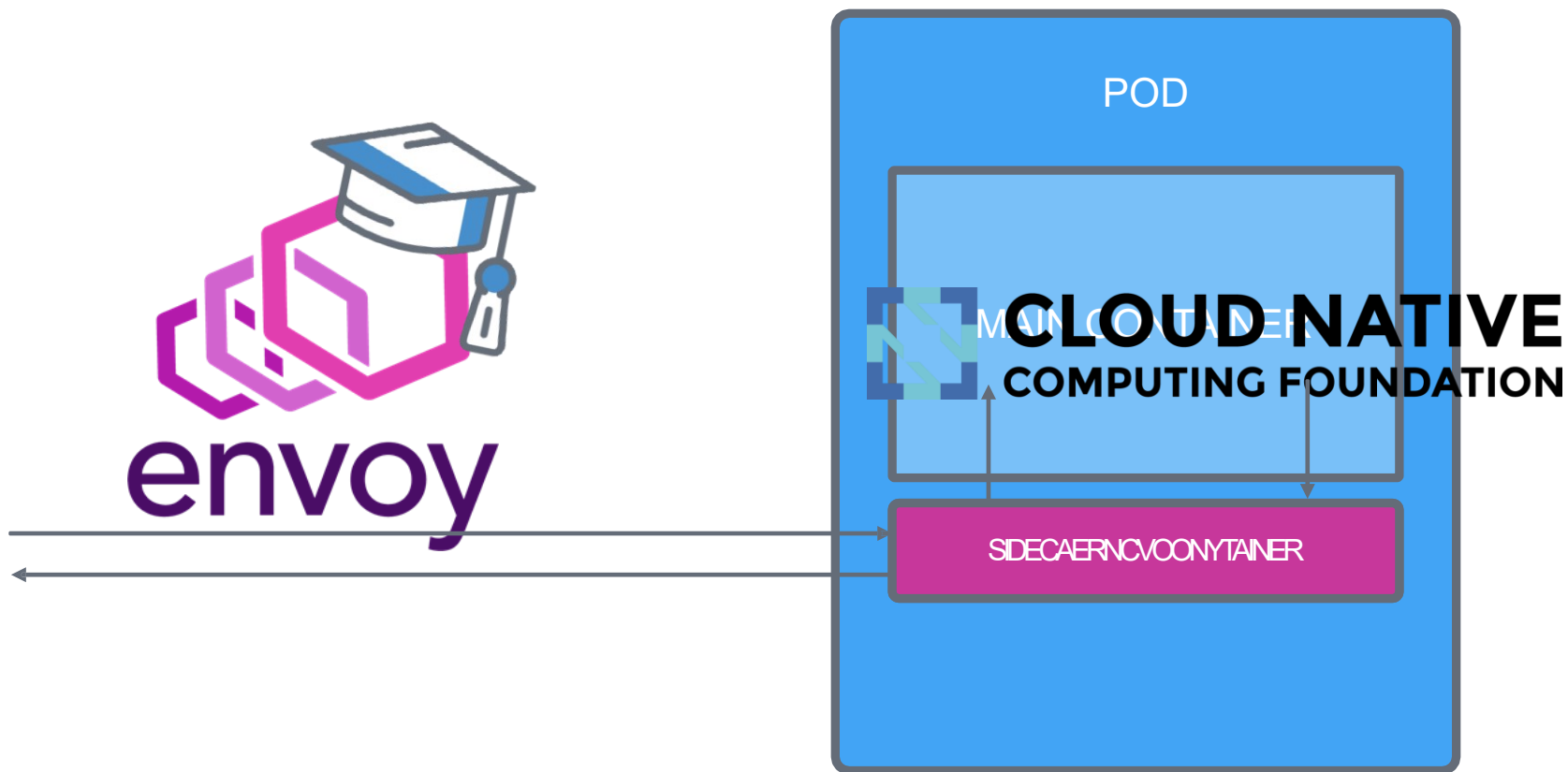


Proxy



Proxy

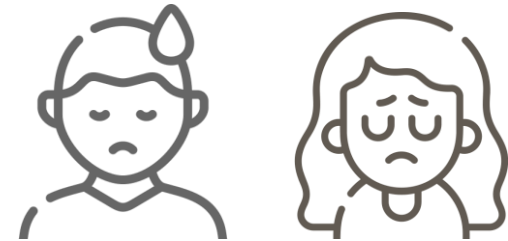




MONOLITHS & MICROSERVICES



Software Development until the 2000s



Agile Manifesto



Individuals &
Interactions

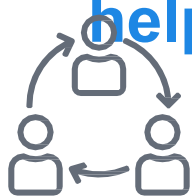
Processes and Tools



Working
Software

Comprehensive Documentation

“We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:”



Customer
Collaboration

Contract Negotiation

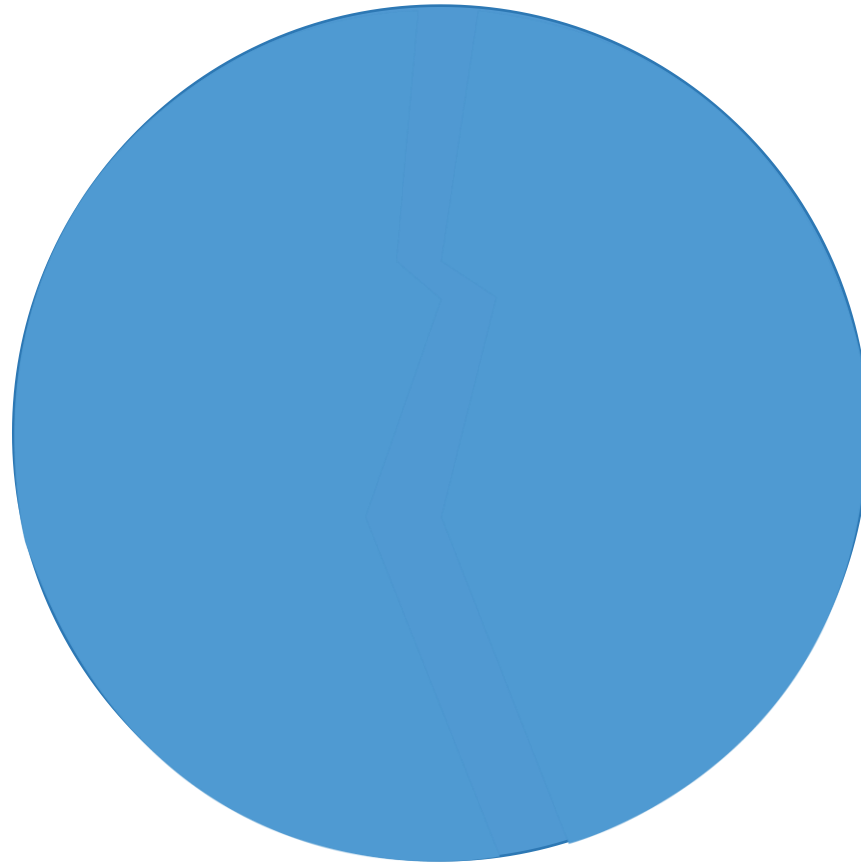


Responding to
Change

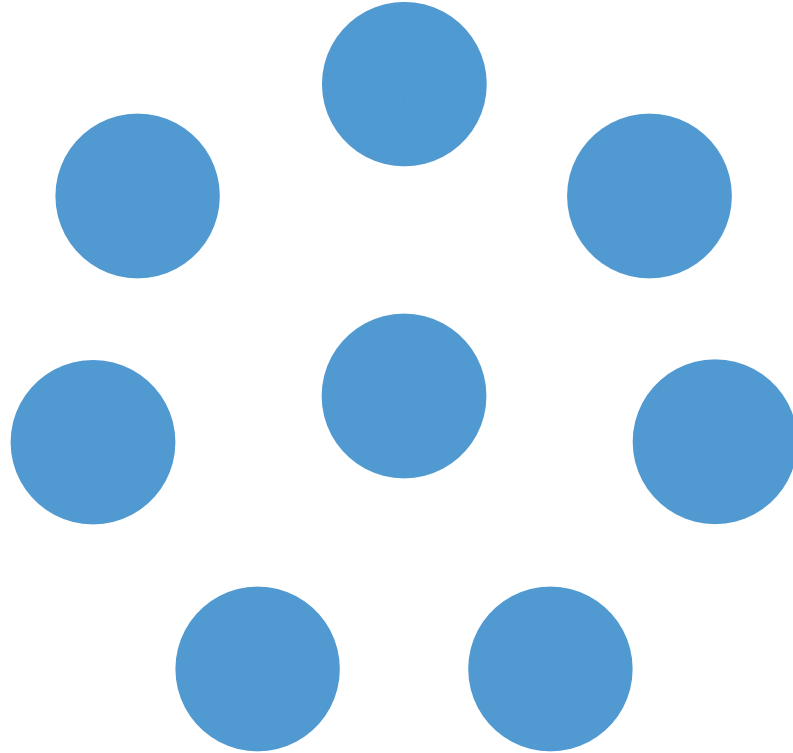
Following a plan

“That is, while there is value in the items on the right, we value the items on the left more.”

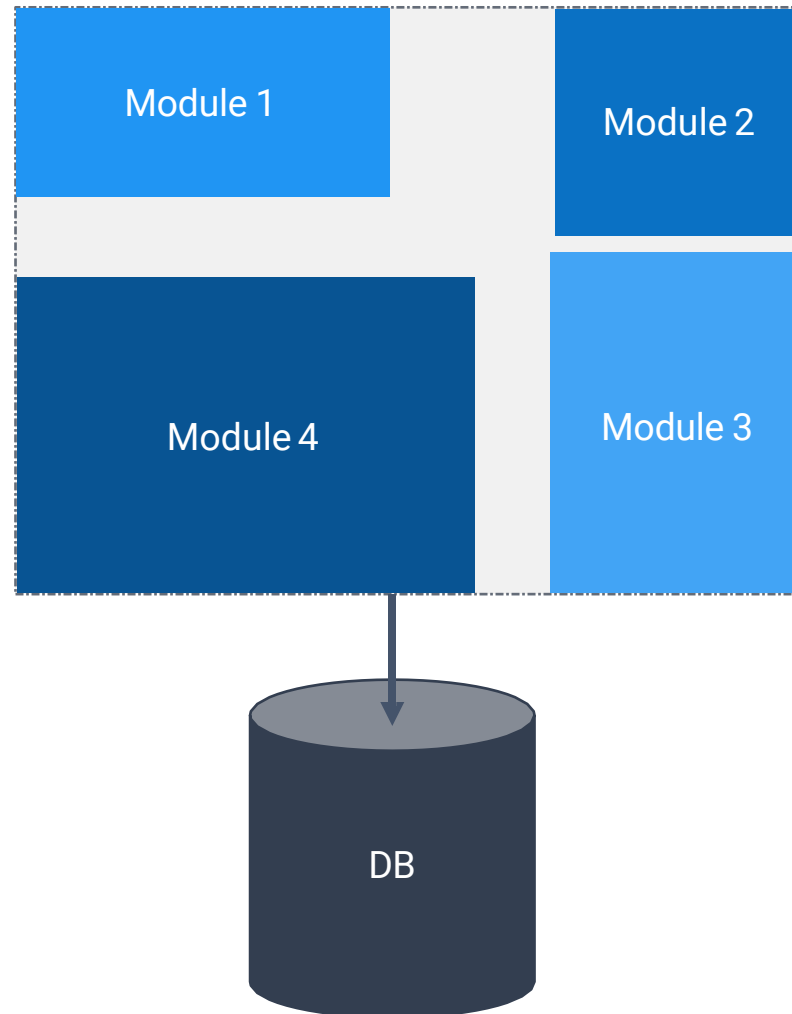
Agile Practices



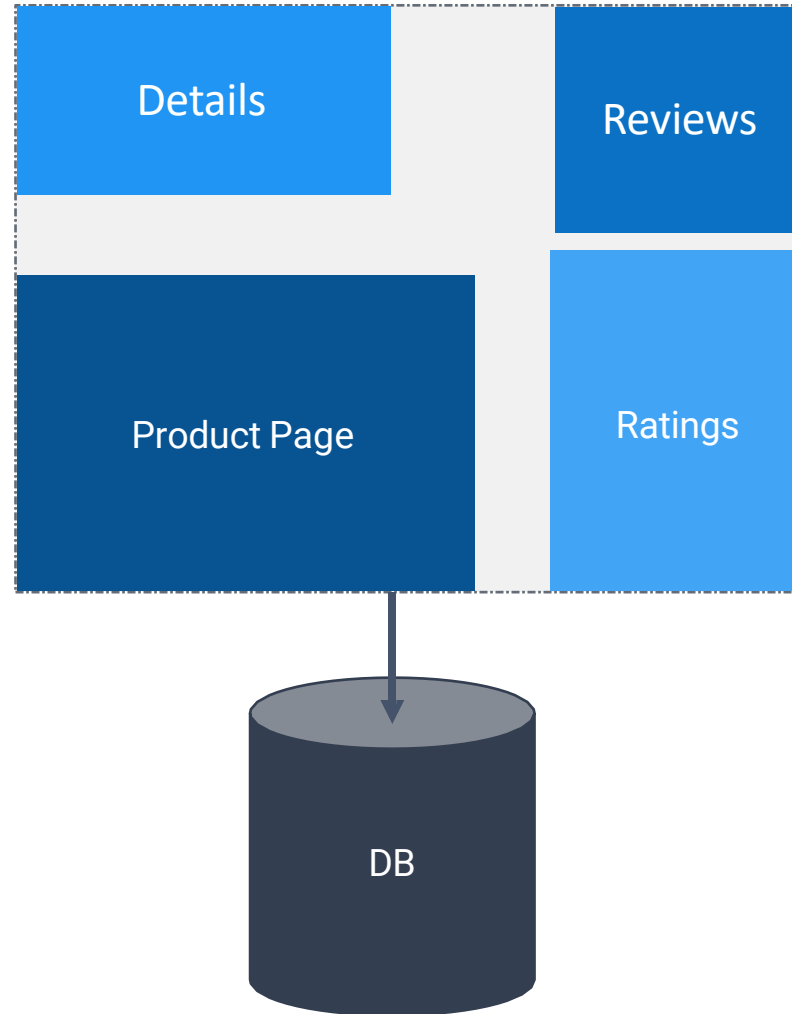
Agile Practices



Monolithic Applications



A Monolithic Book Info App



A Monolithic Book Info App

BookInfo Sample

Sign in

The Comedy of Errors

Summary: [Wikipedia Summary](#): The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

Book Details

Type:

paperback

Pages:

200

Publisher:

PublisherA

Language:

English

ISBN-10:

1234567890

ISBN-13:

123-1234567890

Book Reviews

An extremely entertaining play by Shakespeare. The slapstick humour is refreshing!

— Reviewer1

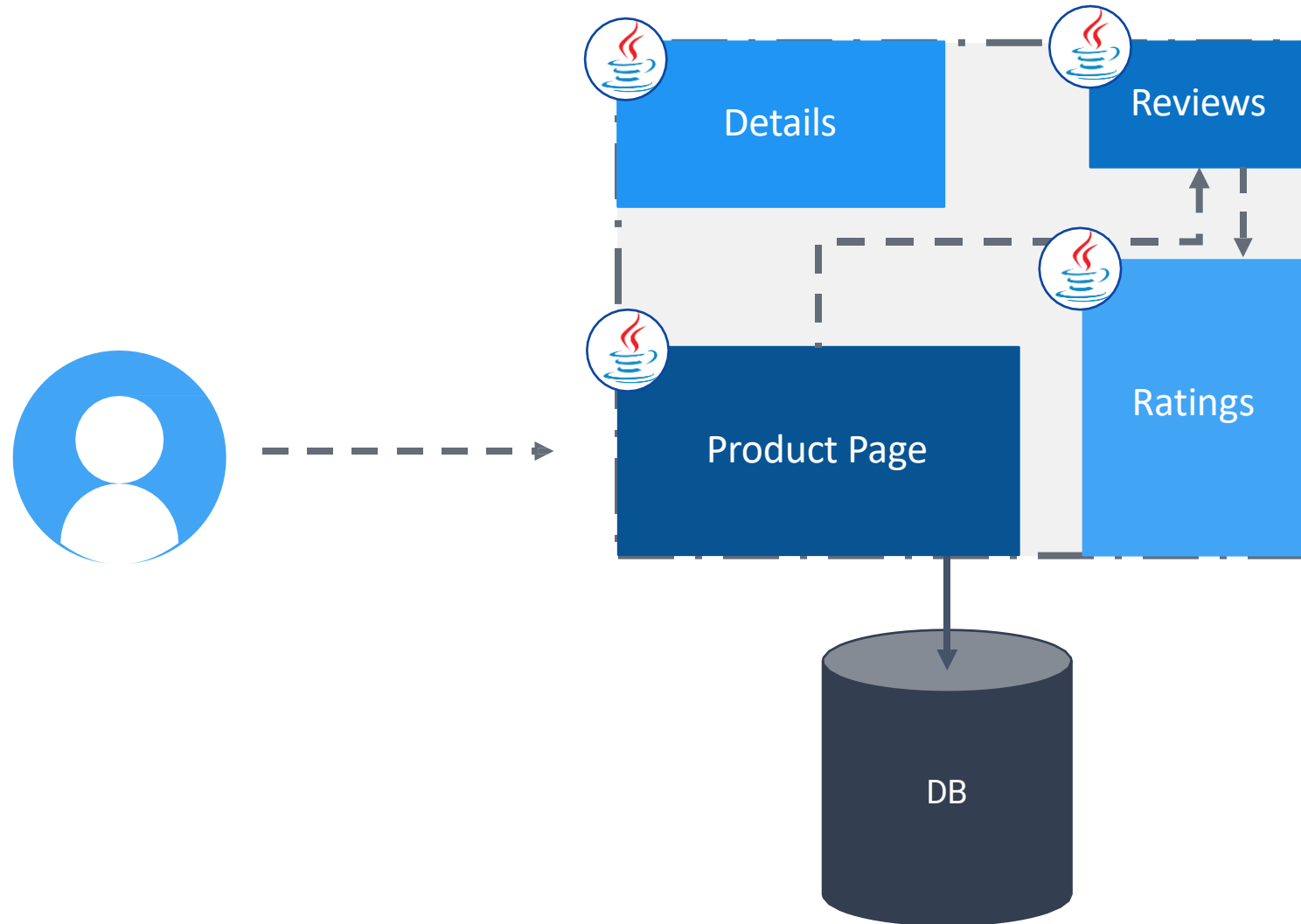


Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare.

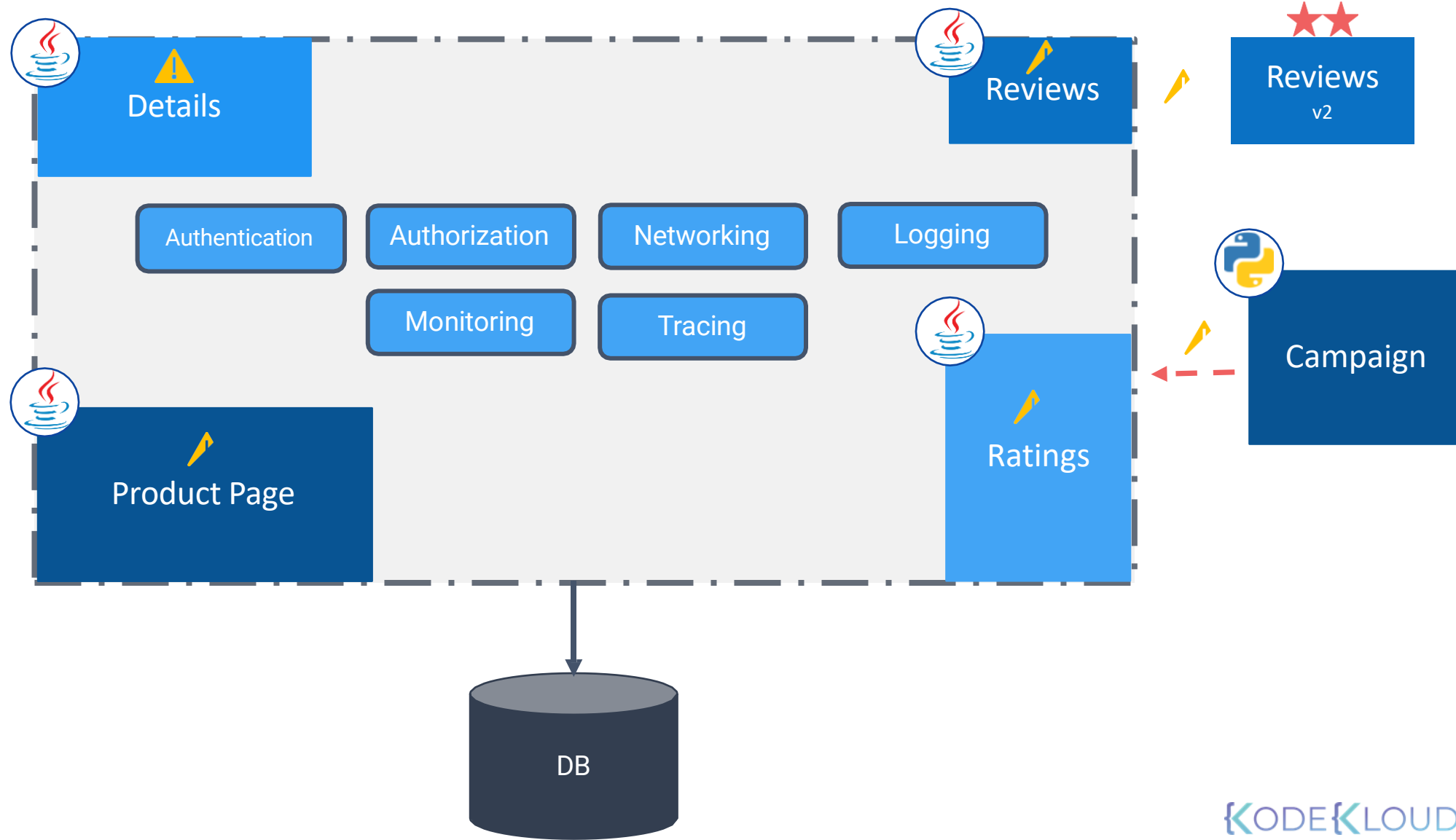
— Reviewer2



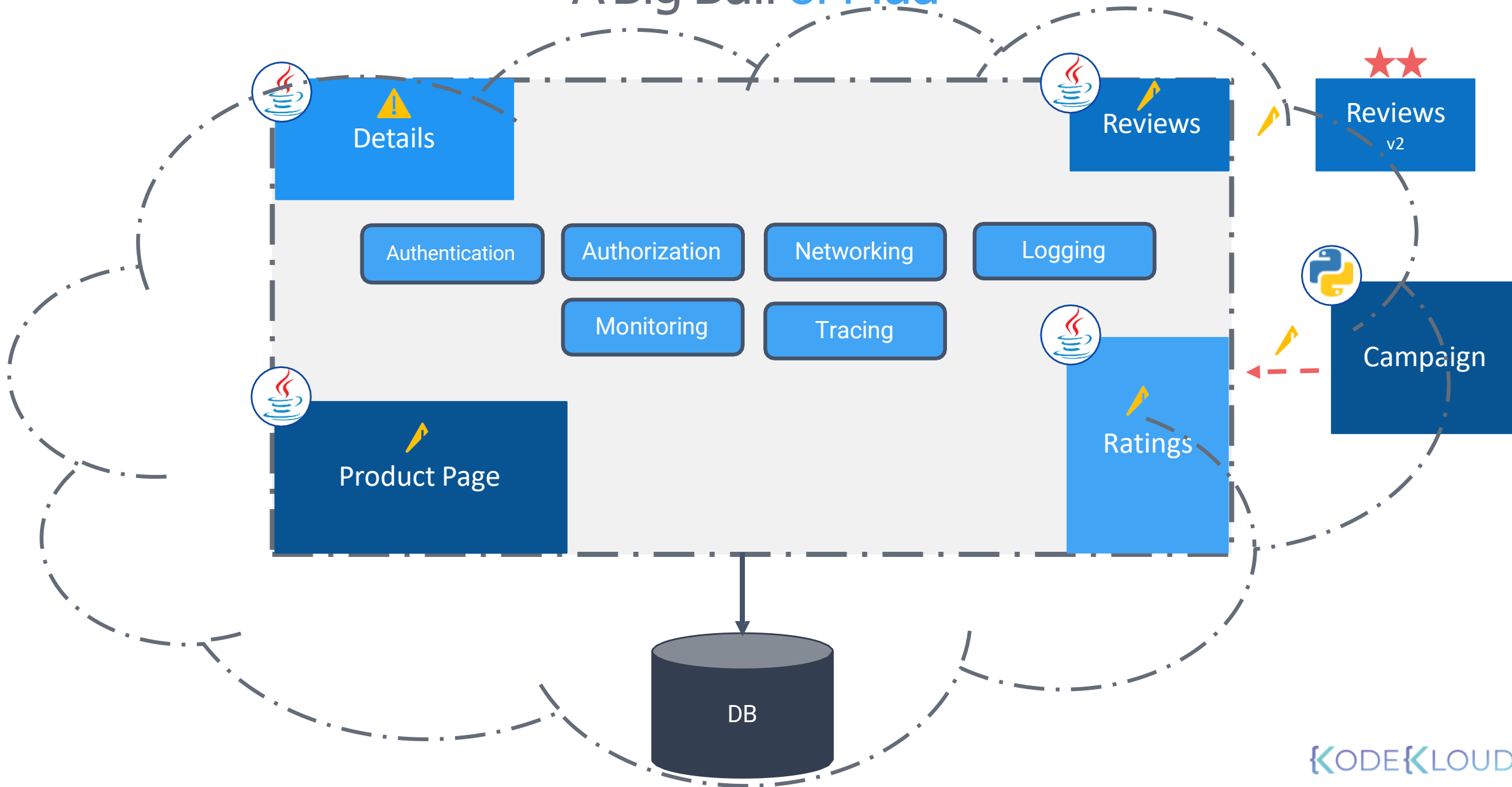
A Monolithic Book Info App



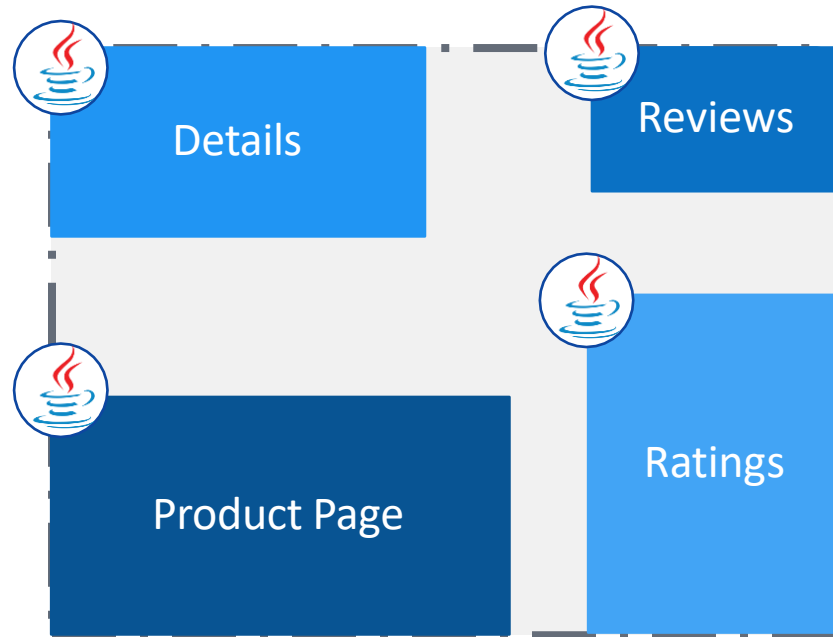
A Monolithic Book Info App



A Big Ball of Mud



A Monolithic Book Info App



A **Microservices** Book Info App



Product Page



Details

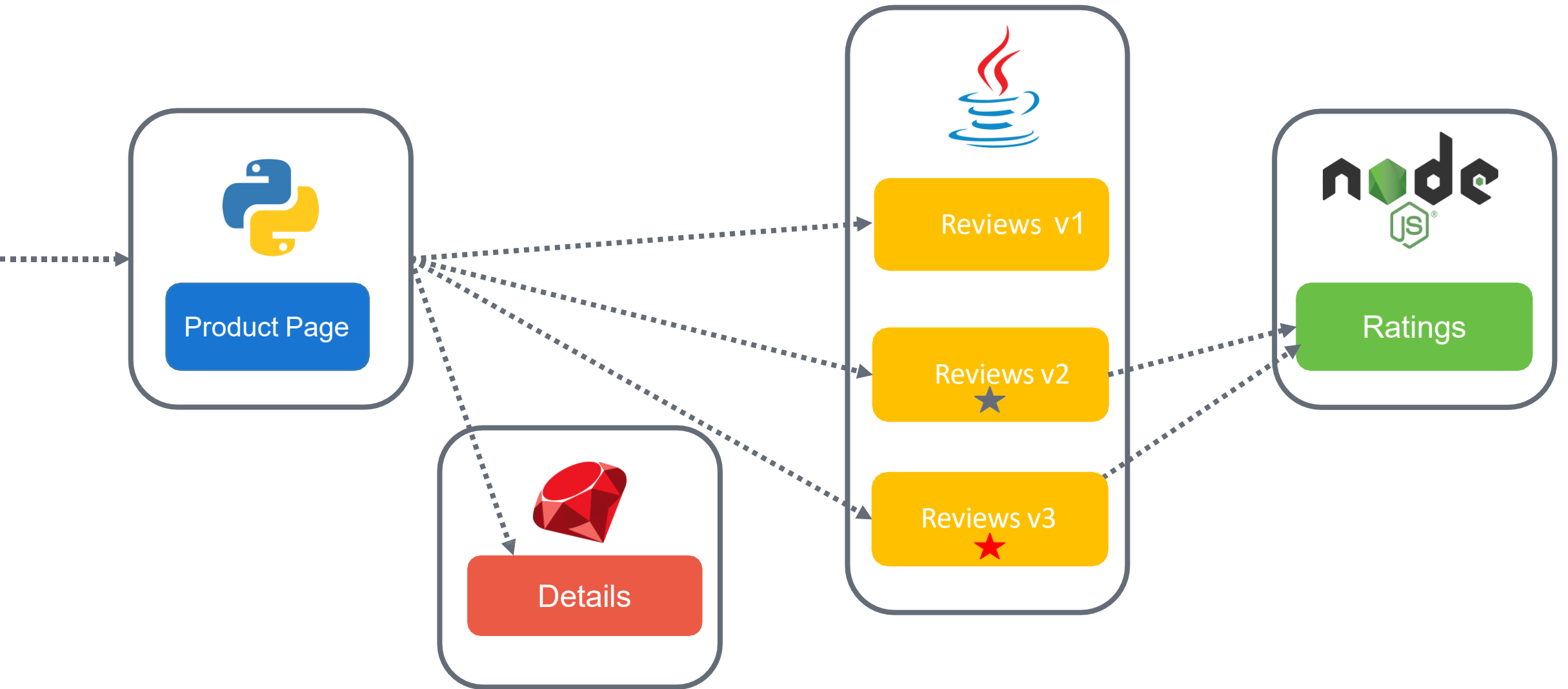


Reviews



Ratings

A **Microservices** Book Info App



Pros of Microservices



Scalability



Faster, smaller releases



Technology and language agnostic Development lifecycle

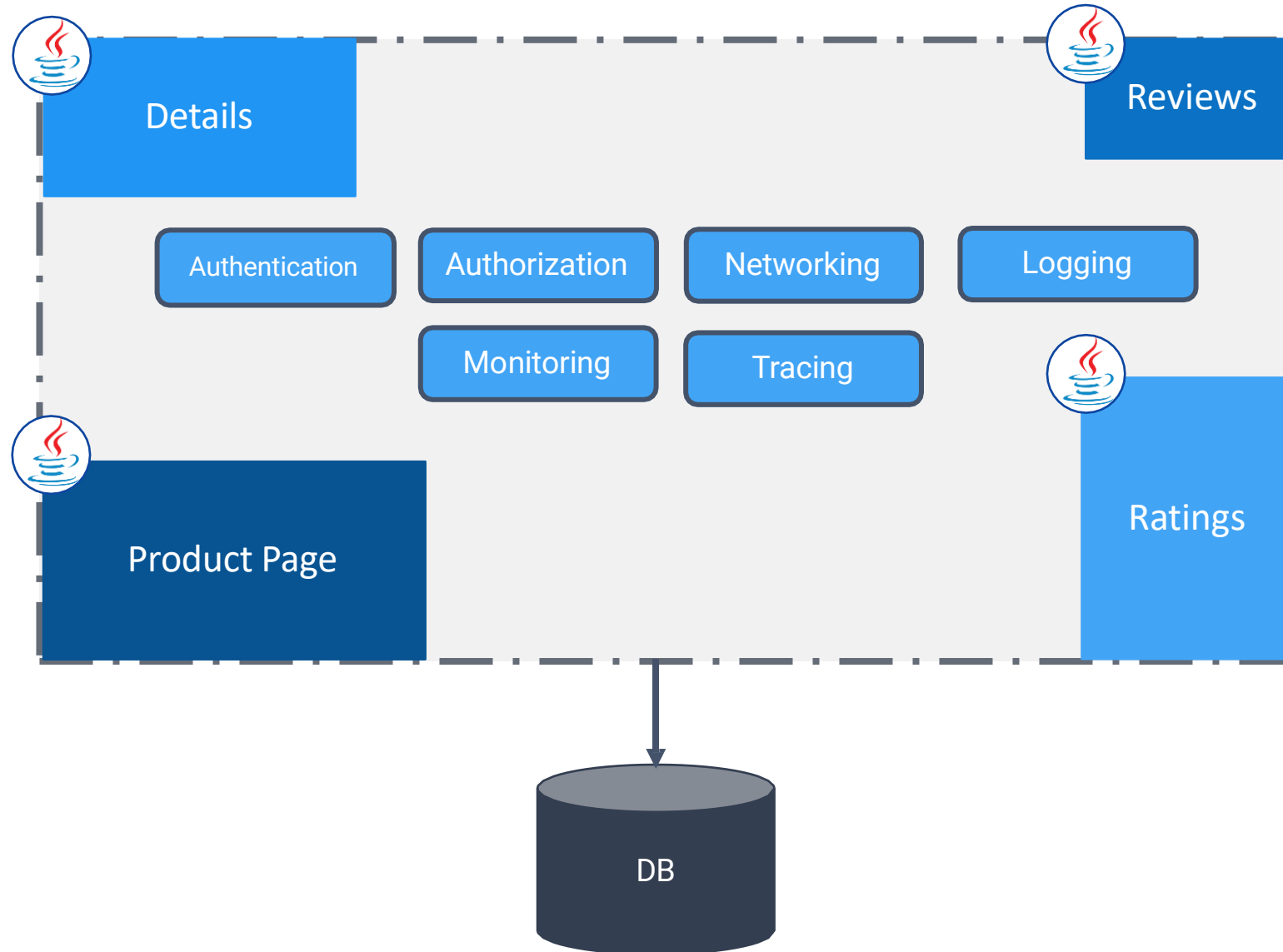


System resiliency and isolation

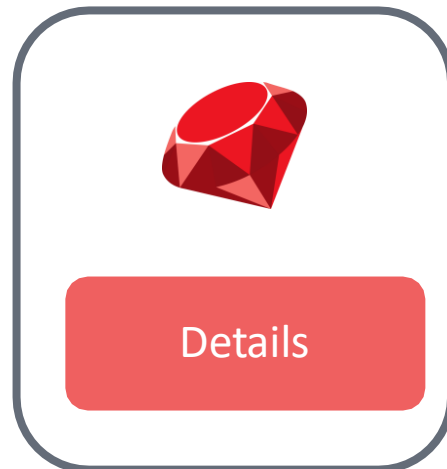
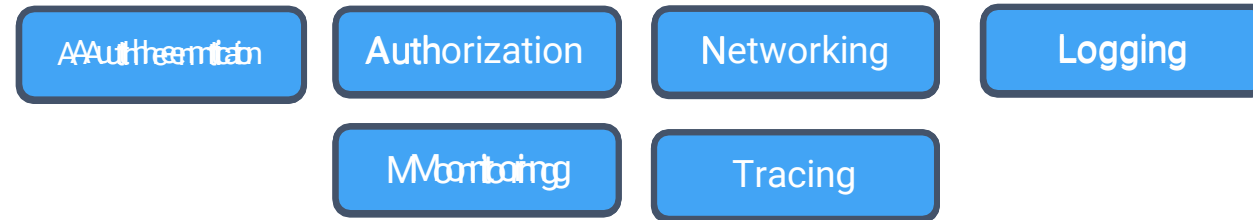


Independent and easy to understand services

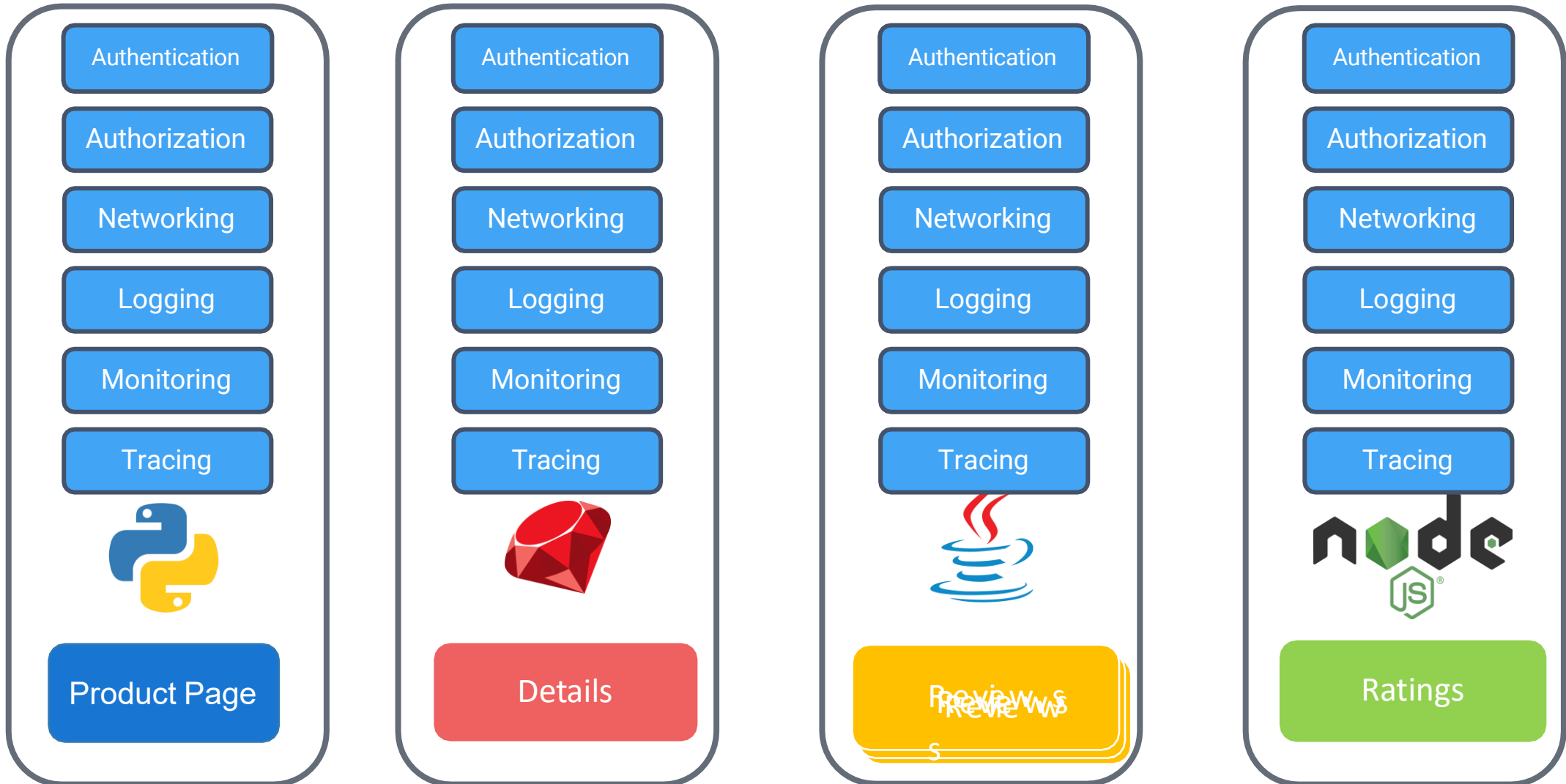
A Monolithic Book Info App



A **Microservices** Book Info App



A Problem: Fat Microservices



Cons of **Microservices**



**Complex Service
Networking**



Security



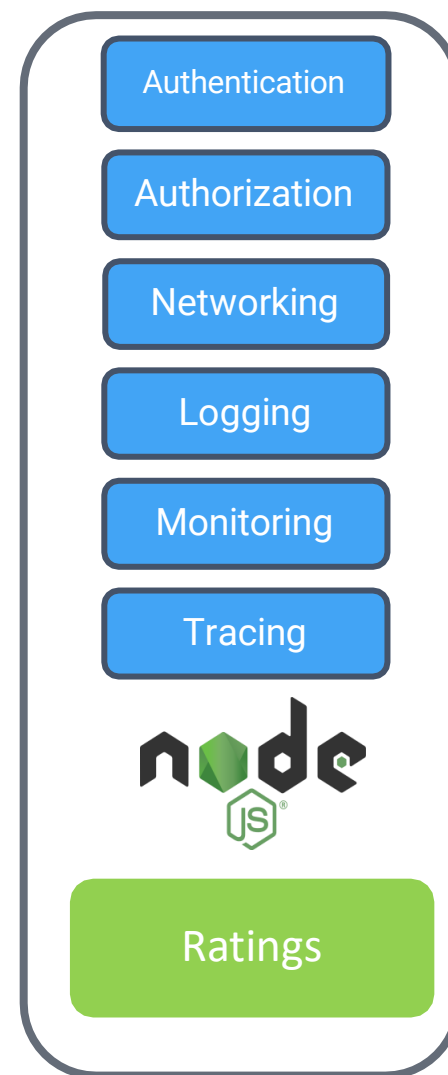
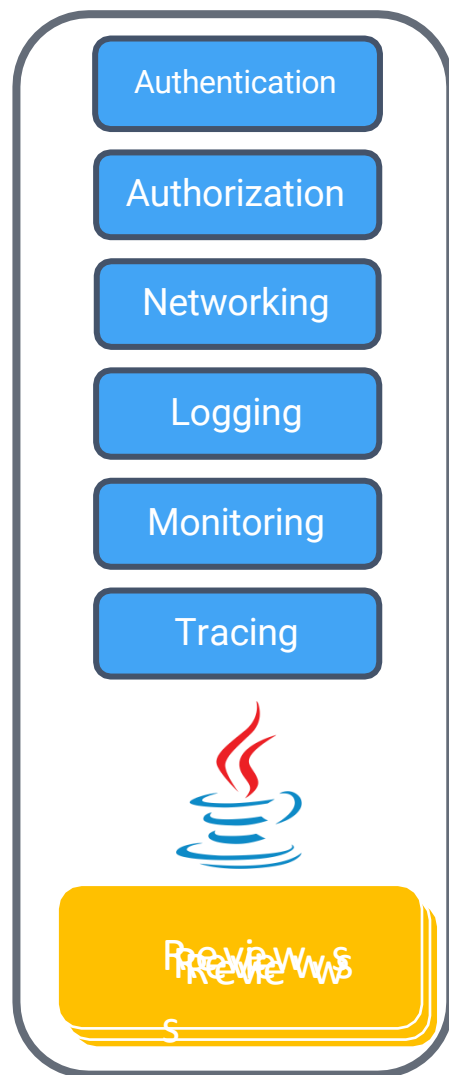
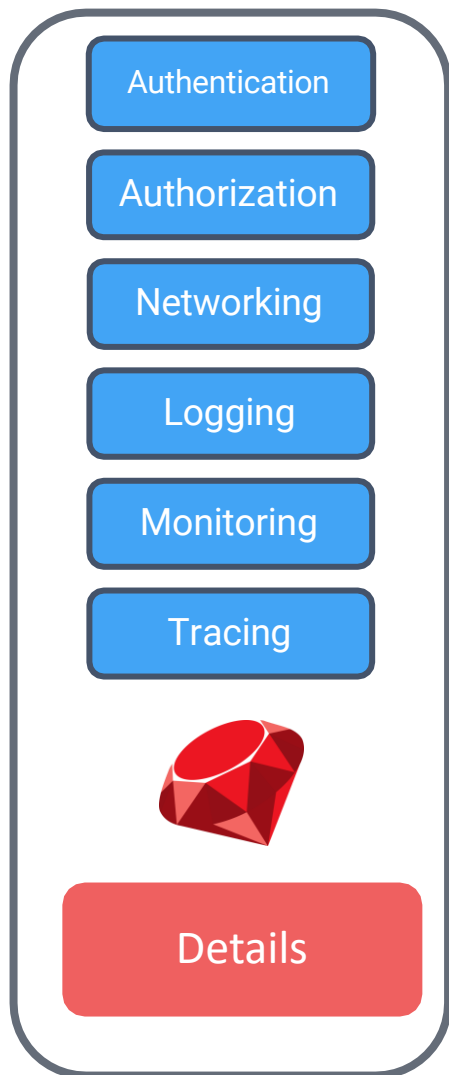
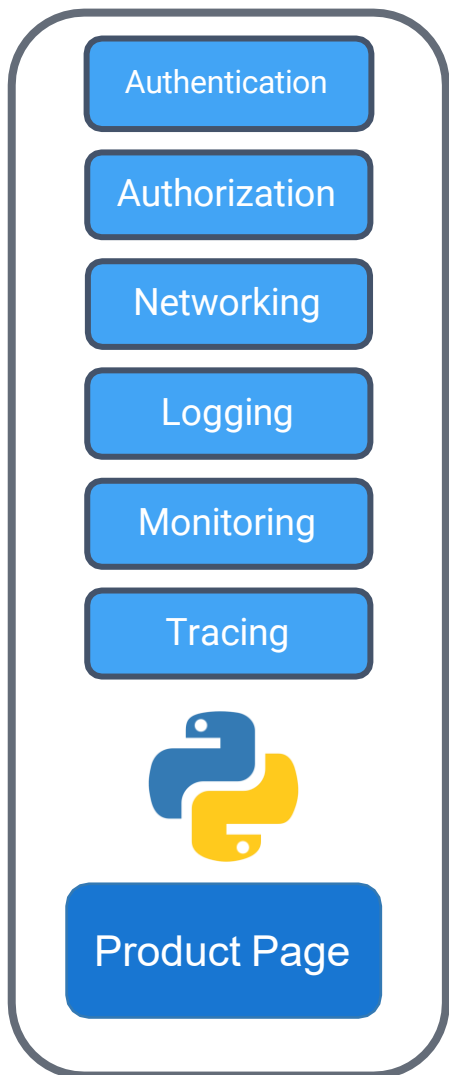
Observability

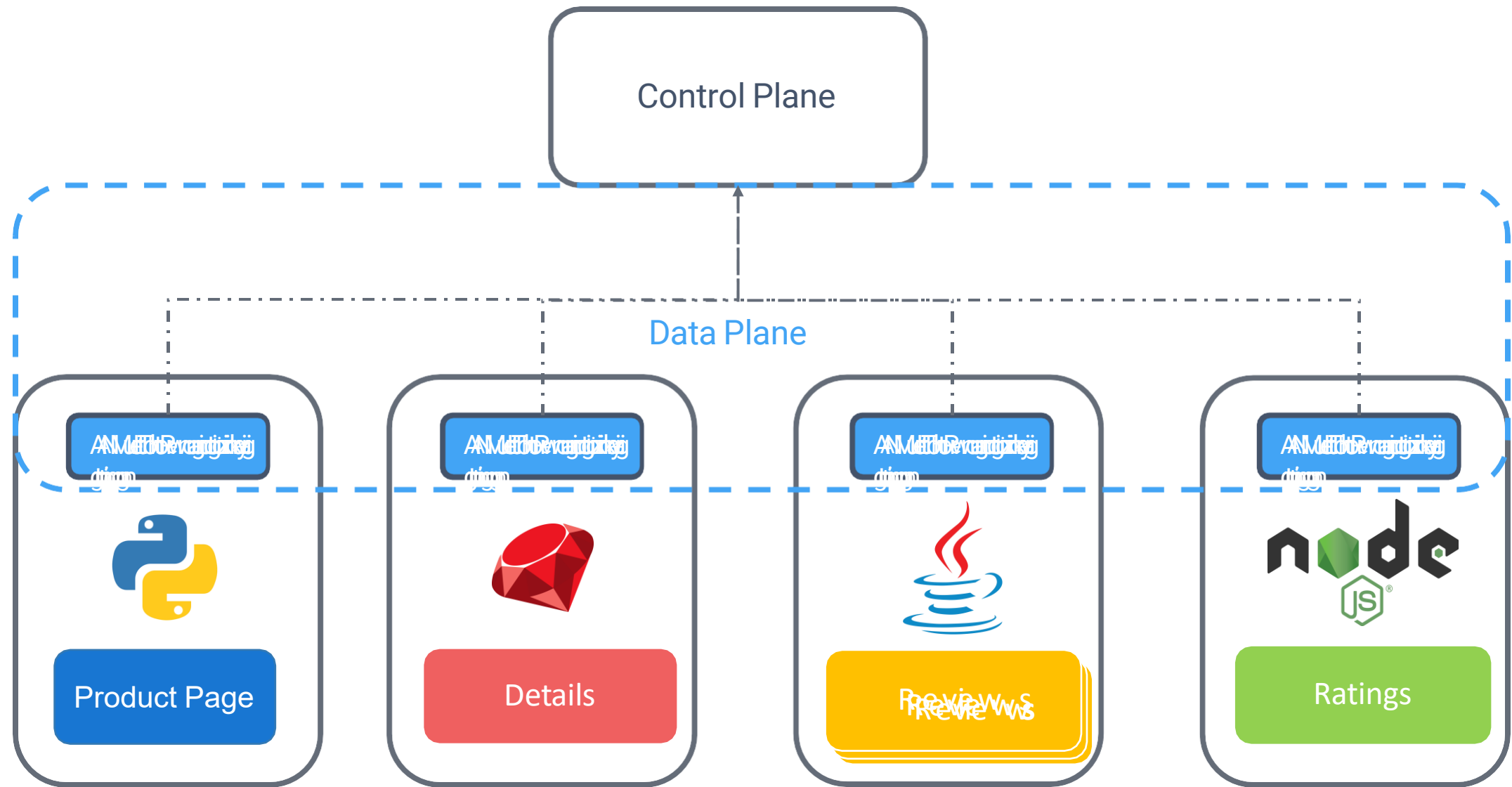


**Overload for
Traditional Operation
Models**

SERVICE MESH



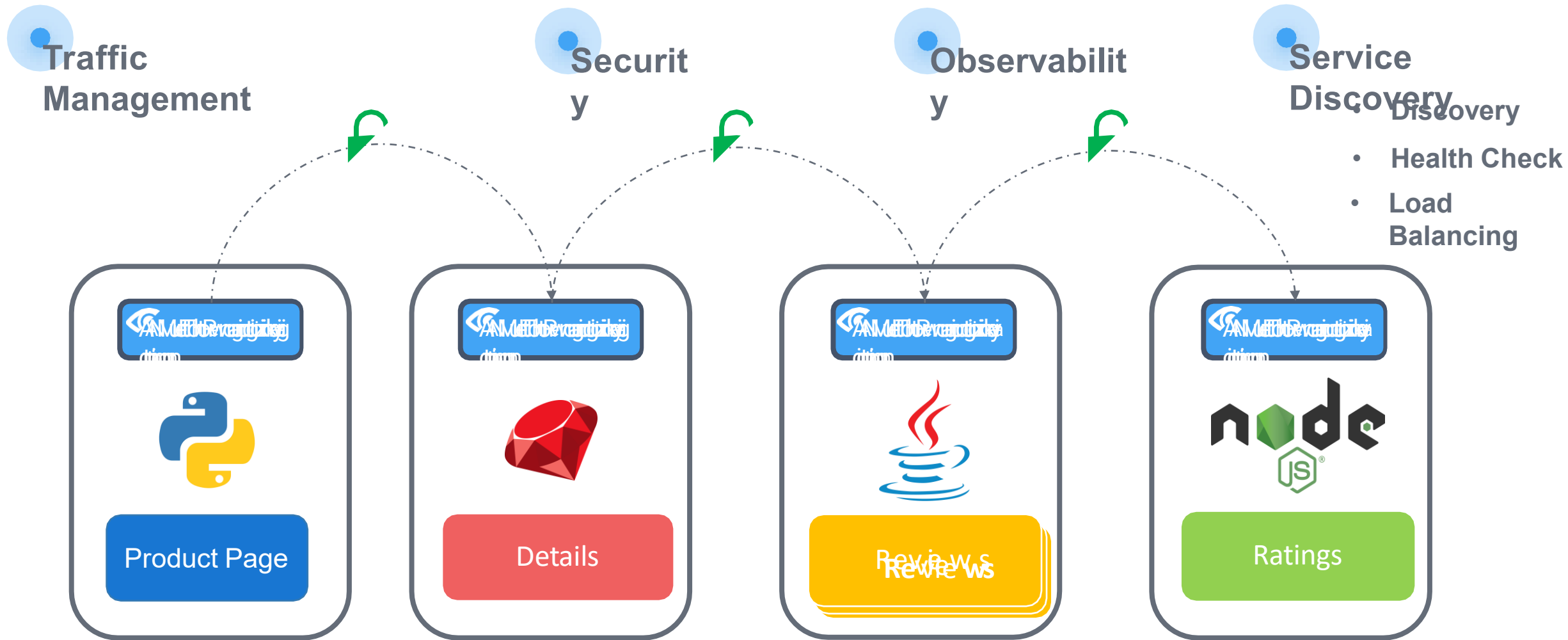




What is Service Mesh?

It is a dedicated and configurable infrastructure layer that handles the communication between services without having to change the code in a microservice architecture.

What is Service Mesh Responsible For?



ISTIO





kubernetes



Google Cloud

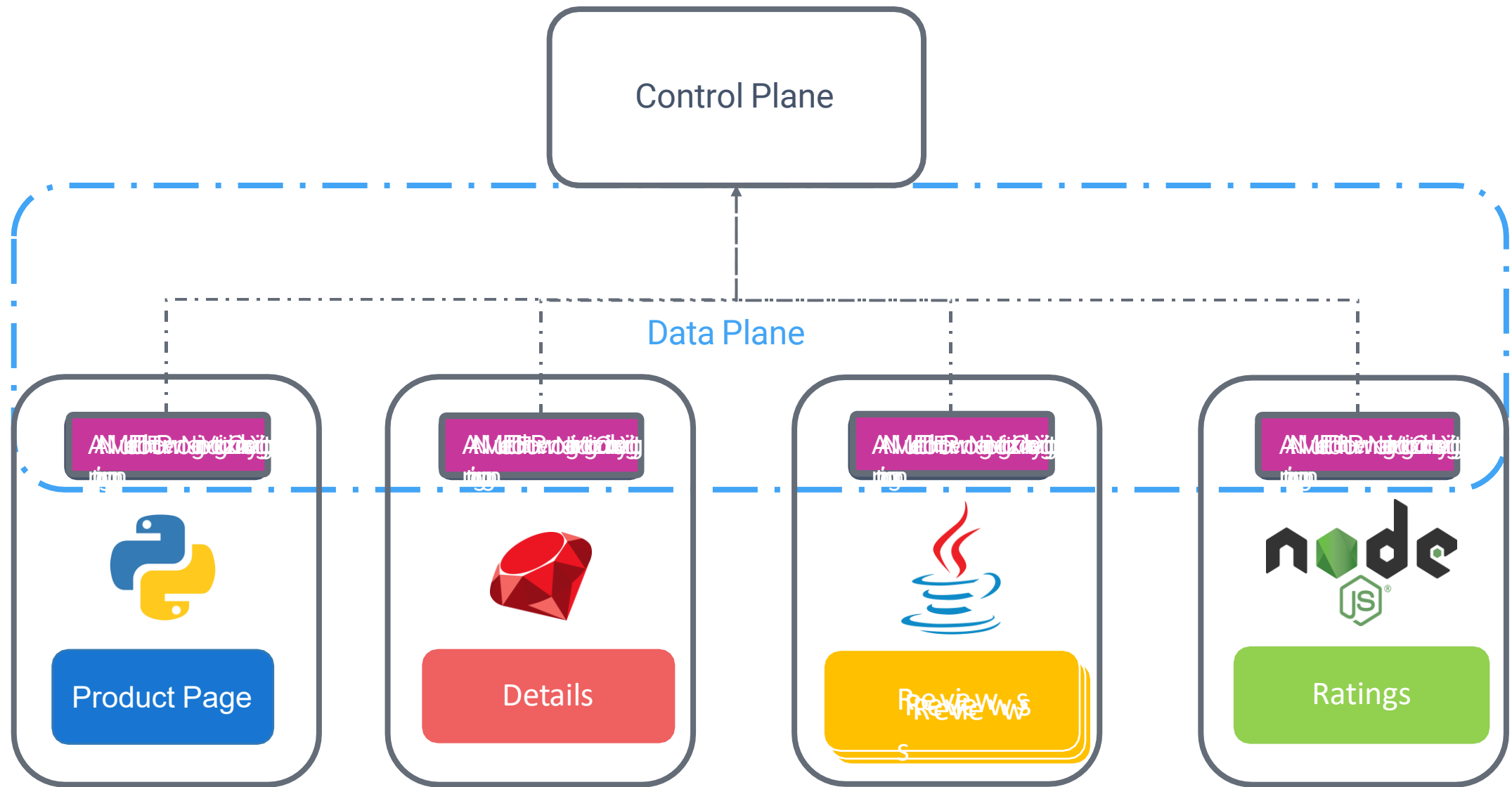


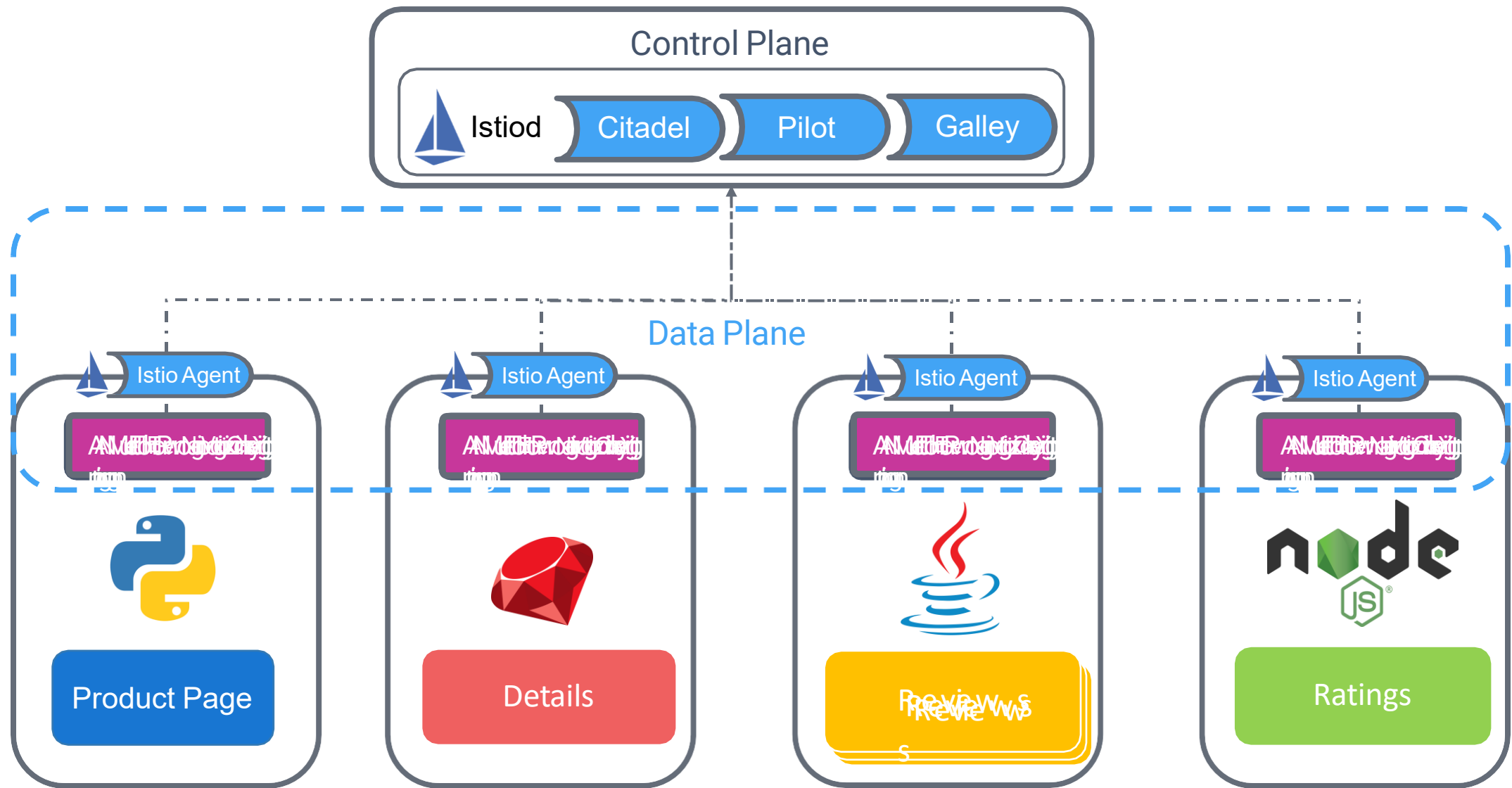
IBM Cloud



Red Hat

vmware®





INSTALLING ISTIOCTL



Installing istioctl

> _

```
$ curl -L https://istio.io/downloadIstio | sh -
```

% Total	% Received	% Xferd	Average Dload	Speed Upload	Time Total	Time Spent	Time Left	Current Speed
100	102	100	102	0	0	123	0	--:--:-- 123
100	4573	100	4573	0	0	3606	0	0:00:01 0:00:01 --:--:-- 3606

Downloading istio-1.9.4 from
<https://github.com/istio/istio/releases/download/1.9.4/istio-1.9.4-osx.tar.gz> ...
Istio 1.9.4 Download Complete!

Istio has been successfully downloaded into the istio-1.9.4 folder on your
system. Next Steps:

See <https://istio.io/latest/docs/setup/install/> to add Istio to your Kubernetes
cluster.

To configure the istioctl client tool for your workstation,
add the /Users/sevikarakose/Downloads/istio-1.9.4/bin directory to your
environment path variable with:

```
export PATH="$PATH:/Users/sevikarakose/Downloads/istio-1.9.4/bin"
```

Begin the Istio pre-installation check by running:
istioctl x precheck

Need more information? Visit <https://istio.io/latest/docs/setup/install/>

Installing istioctl


```
> _  
$ cd istio-1.10.0  
$ ls  
LICENSE          README.md        bin              manifest.yaml    manifests  
samples          tools  
$ export PATH=$PWD/bin:$PATH  
$ istioctl verify-install  
0 Istio control planes detected, checking --revision "default" only  
0 Istio injectors detected  
Error: could not load IstioOperator from cluster: the server could not find the  
requested resource. Use --filename
```




{K}ODE{K}LOUD

INSTALLING ISTIO ON YOUR CLUSTER





Install with
Istioctl

Istio Operator
Install

Install with
Helm



> _

```
$ istioctl install --set profile=demo -y
```

Detected that your cluster does not support third party JWT authentication.
Falling back to less secure first party JWT. See
<https://istio.io/v1.9/docs/ops/best-practices/security/#configure-third-party-service-account-tokens> for details.

Istio core installed

- ✓ Istiod installed
- ✓ Ingress gateways installed
- ✓ Egress gateways installed
- ✓ Installation complete

istio-ingressgateway

Istiod

istio-egressgateway



istio-system

> _

```
$ istioctl verify-install
```

```
1 Istio control planes detected, checking --revision "default" only
✓ Deployment: istio-ingressgateway.istio-system checked successfully
✓ PodDisruptionBudget: istio-ingressgateway.istio-system checked successfully
✓ Role: istio-ingressgateway-sds.istio-system checked successfully
✓ RoleBinding: istio-ingressgateway-sds.istio-system checked successfully
✓ Service: istio-ingressgateway.istio-system checked successfully
✓ ServiceAccount: istio-ingressgateway-service-account.istio-system checked successfully
✓ Deployment: istio-egressgateway.istio-system checked successfully
✓ PodDisruptionBudget: istio-egressgateway.istio-system checked successfully
✓ Role: istio-egressgateway-sds.istio-system checked successfully
✓ RoleBinding: istio-egressgateway-sds.istio-system checked successfully
✓ Service: istio-egressgateway.istio-system checked successfully
✓ ServiceAccount: istio-egressgateway-service-account.istio-system checked successfully
✓ ClusterRole: istiod-istio-system.istio-system checked successfully

✓ EnvoyFilter: tcp-stats-filter-1.9.istio-system checked successfully
Checked 12 custom resource definitions
Checked 3 Istio Deployments
✓ Istio is installed and verified successfully
```

DEPLOYING OUR FIRST APPLICATION WITH ISTIO



> _

```
$ kubectl apply -f samples/bookinfo/platform/kube/bookinfo.yaml
```

```
deployment.apps/details-v1 created  
deployment.apps/ratings-v1 created  
deployment.apps/reviews-v1 created  
deployment.apps/reviews-v2 created  
deployment.apps/reviews-v3 created  
deployment.apps/productpage-v1 created  
...
```

Product Page

Details

Reviews v1

Reviews v2

Reviews v3

Ratings

> _

\$ kubectl get pods -A

NAMESPACE	NAME	READY	STATUS	RESTARTS	AGE
default	details-v1-66b6955995-zgrd8	1/1	Running	0	6m57s
default	productpage-v1-5d9b4c9849-dckrt	1/1	Running	0	6m57s
default	ratings-v1-fd78f799f-s94cc	1/1	Running	0	6m58s
default	reviews-v1-6549ddccc5-bxv4n	1/1	Running	0	6m58s
default	reviews-v2-76c4865449-2qmhj	1/1	Running	0	6m58s
default	reviews-v3-6b554c875-vbf8v	1/1	Running	0	6m58s

Proxy ?

Reviews v1

Proxy ?

Reviews v2

Proxy ?

Reviews v3

Proxy ?

Product Page

Proxy ?

Details

Proxy ?

Ratings

default

> _

```
$ istioctl analyze
```

```
Info [IST0102] (Namespace default) The namespace is not enabled for Istio injection. Run 'kubectl label namespace default istio-injection=enabled' to enable it, or 'kubectl label namespace default istio-injection=disabled' to explicitly mark it as not needing injection.
```

Proxy ?

Product Page

Proxy ?

Details

Proxy ?

Reviews v1

Proxy ?

Reviews v2

Proxy ?

Reviews v3

default

Proxy ?

Ratings

> _

```
$ istioctl analyze
```

```
Info [IST0102] (Namespace default) The namespace is not enabled for Istio injection. Run 'kubectl label namespace default istio-injection=enabled' to enable it, or 'kubectl label namespace default istio-injection=disabled' to explicitly mark it as not needing injection.
```

kube-system

Product Page

Details

Reviews v1

Reviews v2

Reviews v3

Ratings

default

hr

payroll

> _

```
$ kubectl delete -f samples/bookinfo/platform/kube/bookinfo.yaml
```

```
service "details" deleted  
serviceaccount "bookinfo-details" deleted  
service "ratings" deleted  
serviceaccount "bookinfo-ratings" deleted  
serviceaccount "bookinfo-reviews" deleted  
service "productpage" deleted  
serviceaccount "bookinfo-productpage" deleted
```

Product Page

Details

Reviews v1

Reviews v2

Reviews v3

Ratings

default

> _

```
$ kubectl label namespace default istio-injection=enabled
```

```
namespace/default labeled
```

istio-injection=enabled

default

> _

```
$ kubectl apply -f samples/bookinfo/platform/kube/bookinfo.yaml
```

```
deployment.apps/details-v1 created  
deployment.apps/ratings-v1 created  
deployment.apps/reviews-v1 created  
deployment.apps/reviews-v2 created  
deployment.apps/reviews-v3 created  
service/productpage created  
deployment.apps/productpage-v1 created  
...
```

istio-injection=enabled

Reviews v1

Product Page

Details

Reviews v2

Ratings

default

Reviews v3

> _

```
$ istioctl analyze
```

✓ No validation issues found when analyzing namespace: default.

istio-injection=enabled

Reviews v1

Product Page

Details

Reviews v2

Ratings

default

Reviews v3

