



BUILDING FOR THE ROAD AHEAD

DETROIT 2022

Production practice for large-scale financial application platform in China Merchants Bank

*Jiahang Xu, China Merchants Bank
Jianbo Sun, Alibaba Cloud*



KubeCon



CloudNativeCon

North America 2022

BUILDING FOR THE ROAD AHEAD

DETROIT 2022

October 24-28, 2022



Jiahang Xu

Senior Software Engineer
China Merchants Bank



Jianbo Sun

Staff Engineer
Alibaba Cloud

Agenda





Who are we?



招 商 銀 行
CHINA MERCHANTS BANK



Mobile Bank

178million
util 2022.6.30



CMB Life

132million
util 2022.6.30

Has developed a reputation for being a technology-focused bank on the way to cloud native.

Application Management Challenges in CMB

CMB Private Cloud Architecture

App	ES/Redis/Kafka/MySQL/MQ.. (Middleware Service).	App(Docker) (SpringBoot/React/Flink/Task/AI)	App(Docker) (SpringBoot/React/Flink/Task/AI)	App(Function)	BigData App
OS		Kubernetes Clusters		Serverless	
Hypervisor(VM)			Kubernetes Clusters	Hadoop	App
Storage	Server	Networks	BareMetal	Other runtime	

- **Multi app runtimes & infrastructure**
- **Diverse app workloads or services**
- **Application couples with runtimes & infrastructure**

Application Engineers:

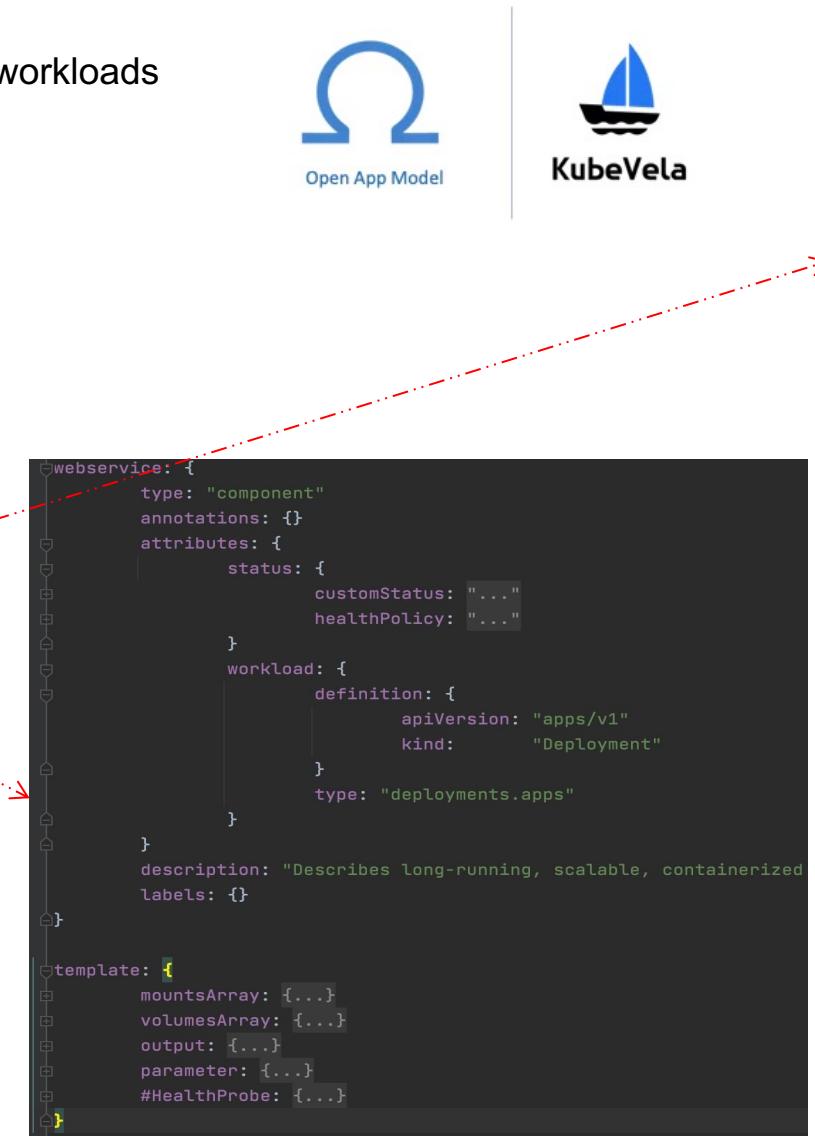
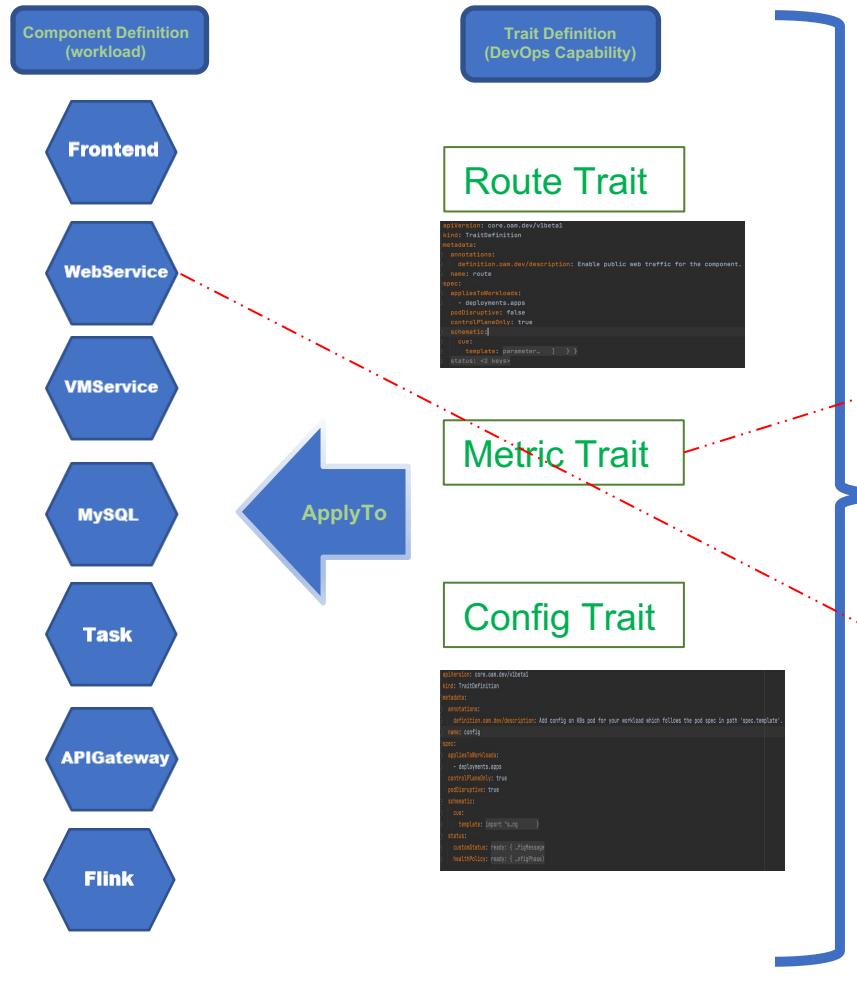
- Want to decouple application from runtimes or infrastructure
- Want application canary delivery for business stability and security
- Want application observability for maintaince

Platform Engineers:

- Want to have high-extensive framework to integrate cloud native ecosystem

OAM Decouples Application from Runtime & Infrastructure

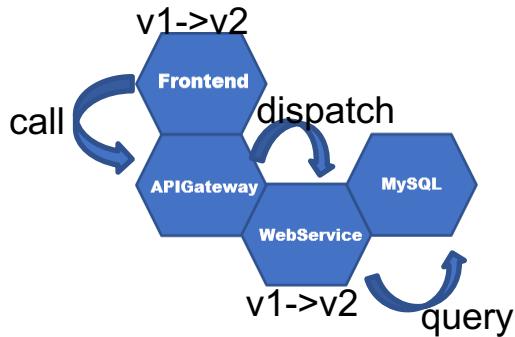
- Separate of Concern by Abstraction with 7-typical workloads



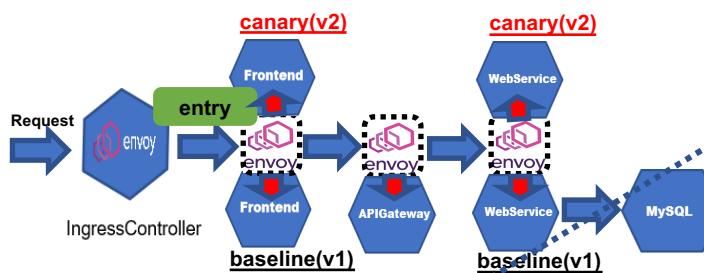
```
metrics: {
  type: "trait"
  annotations: {}
  labels: {
    "ui-hidden": "true"
  }
  description: "Add metrics annotations on K8s pod for your workload to enable metrics."
  attributes: {
    podDisruptive: true
    appliesToWorkLoads: ["*"]
  }
}
template: {
  patch: {
    spec: template: metadata: {
      annotations: {
        // +patchStrategy=retainKeys
        "prometheus.io/base-path": parameter.basePath
        // +patchStrategy=retainKeys
        "prometheus.io/port": strconv.FormatInt(parameter.port, 10)
        // +patchStrategy=retainKeys
        "prometheus.io/scrape": "true"
      }
    }
    if len(parameter.types) > 0 {...}
  }
}
parameter: {...}
```

Application Canary Delivery as OAM Trait

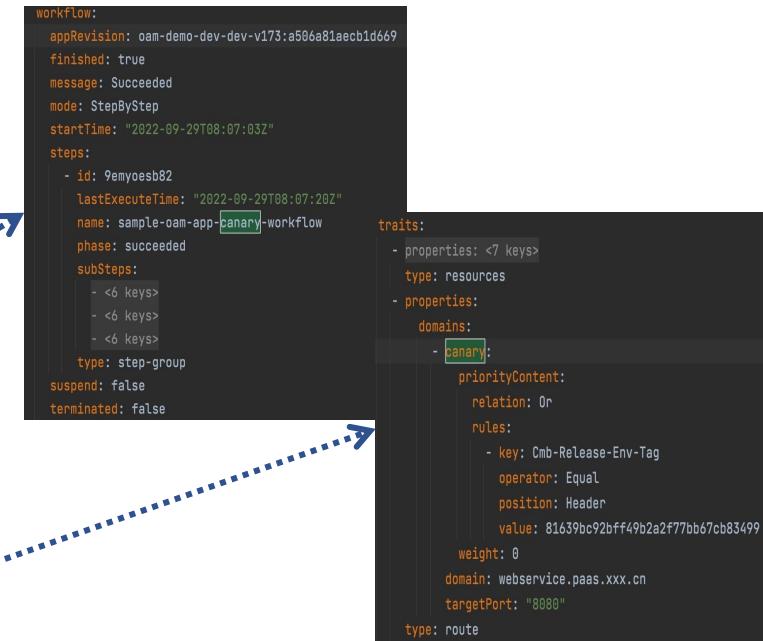
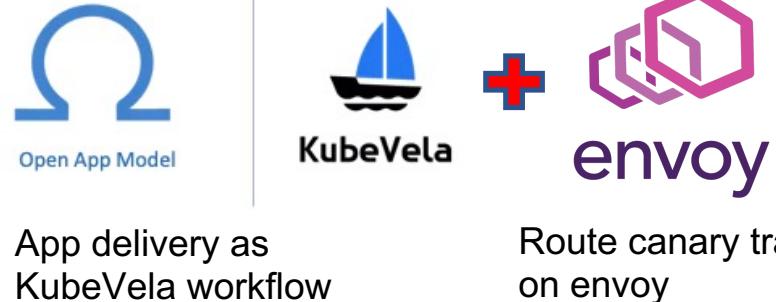
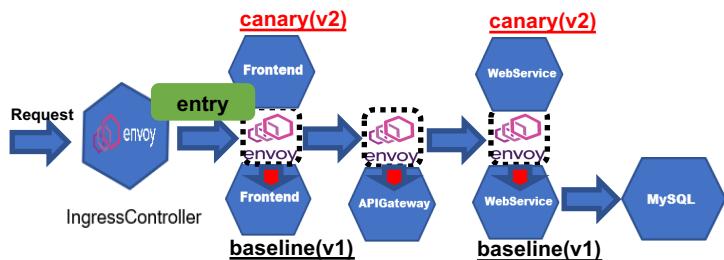
Demo App(Two components) e2e canary delivery



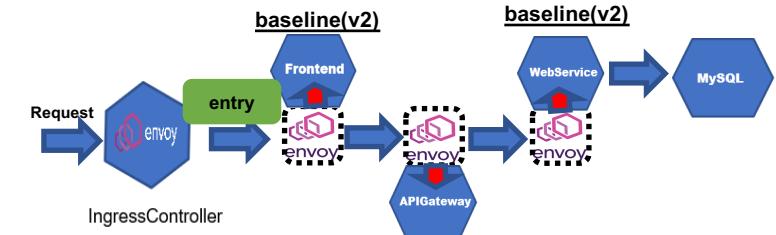
② Canary validate dynamical traffic step (0%~100% traffic to canary)



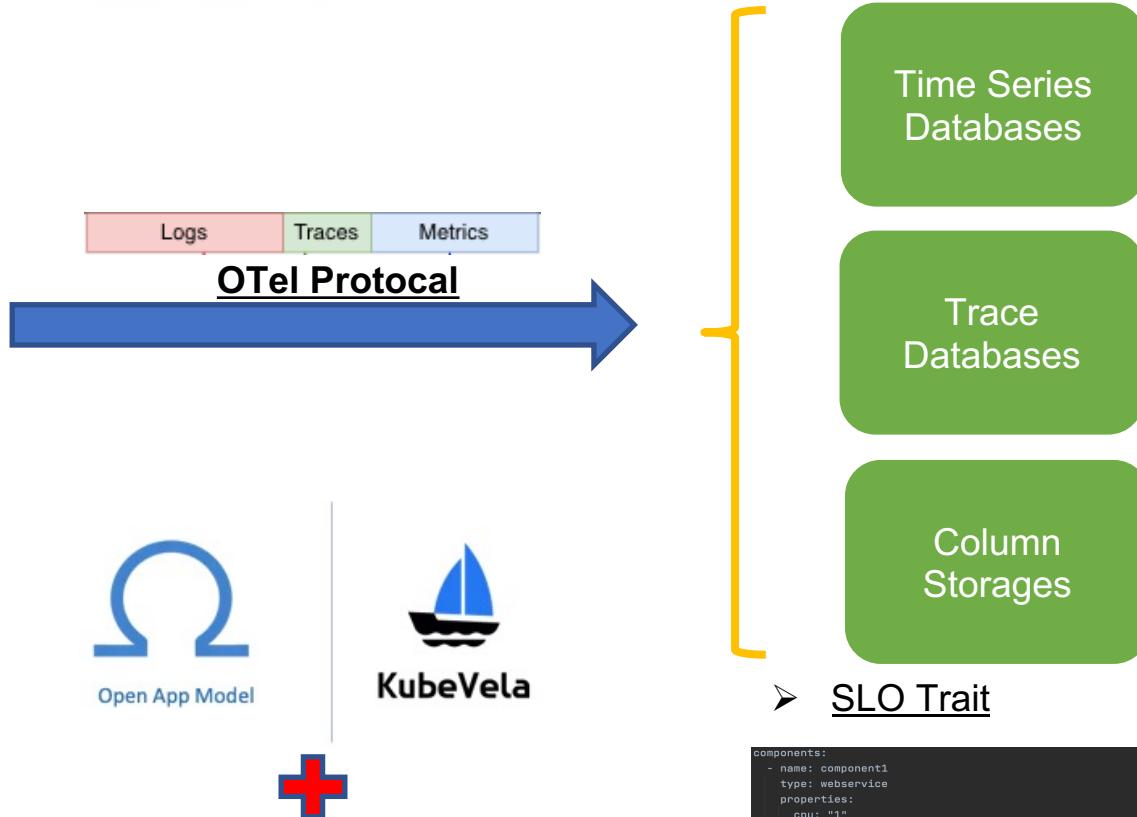
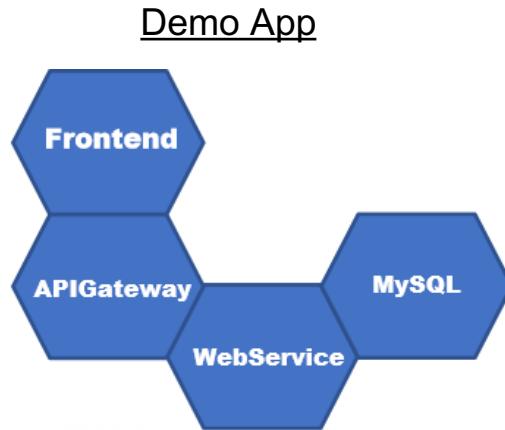
① Canary rollout step (No traffic to canary)



③ App canary e2e delivery done step Baseline(v2)



Application Observability & SLO as Trait



➤ Metric Trait config OTel instrumentation

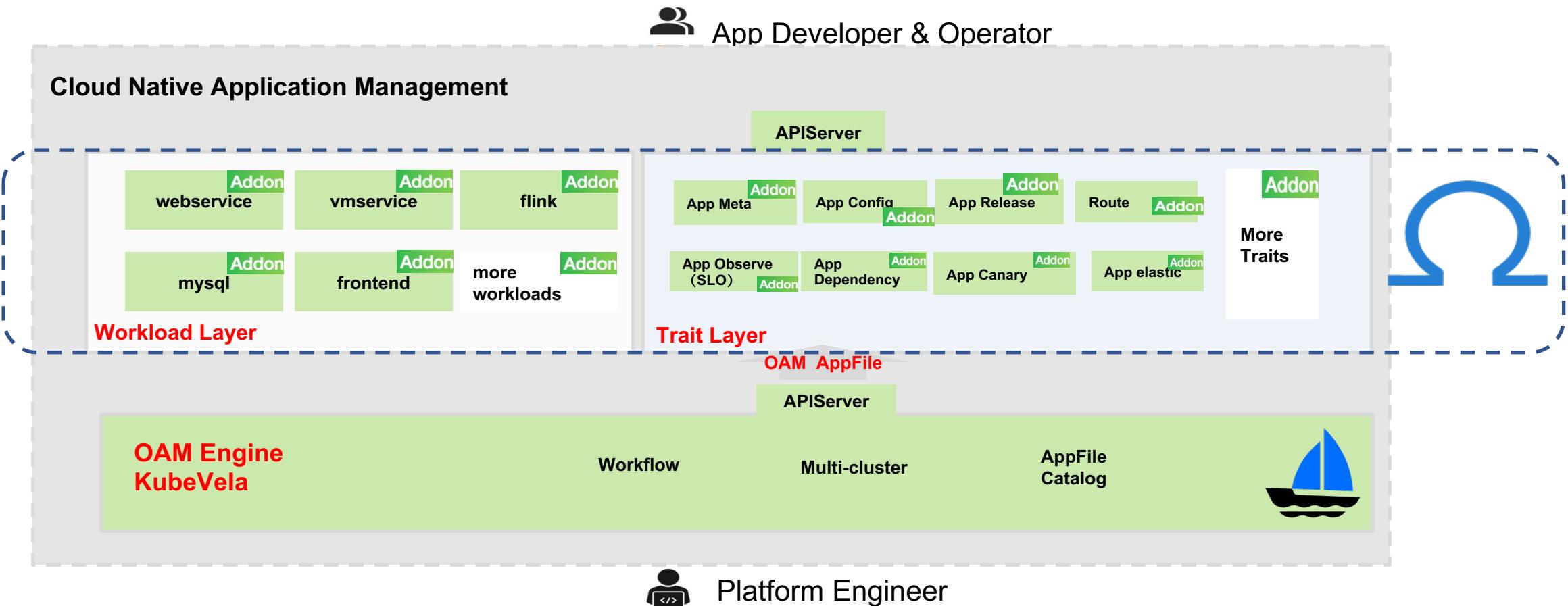
```
metrics: {
  type: "trait"
  annotations: {}
  labels: {
    "ui-hidden": "true"
  }
  description: "Add metrics annotations on K8s pod for your workload to enable metrics."
  attributes: {
    podDisruptive: true
    appliesToWorkloads: ["*"]
  }
}
template: {
  patch: {
    spec: template: metadata: {
      annotations: {
        // +patchStrategy=retainKeys
        "prometheus.io/base-path": parameter.basePath
        // +patchStrategy=retainKeys
        "prometheus.io/port": | strconv.FormatInt(parameter.port, 10)
        // +patchStrategy=retainKeys
        "prometheus.io/scrape": "true"

        if len(parameter.types) > 0 { ... }
      }
    }
    parameter: { ... }
  }
}
```

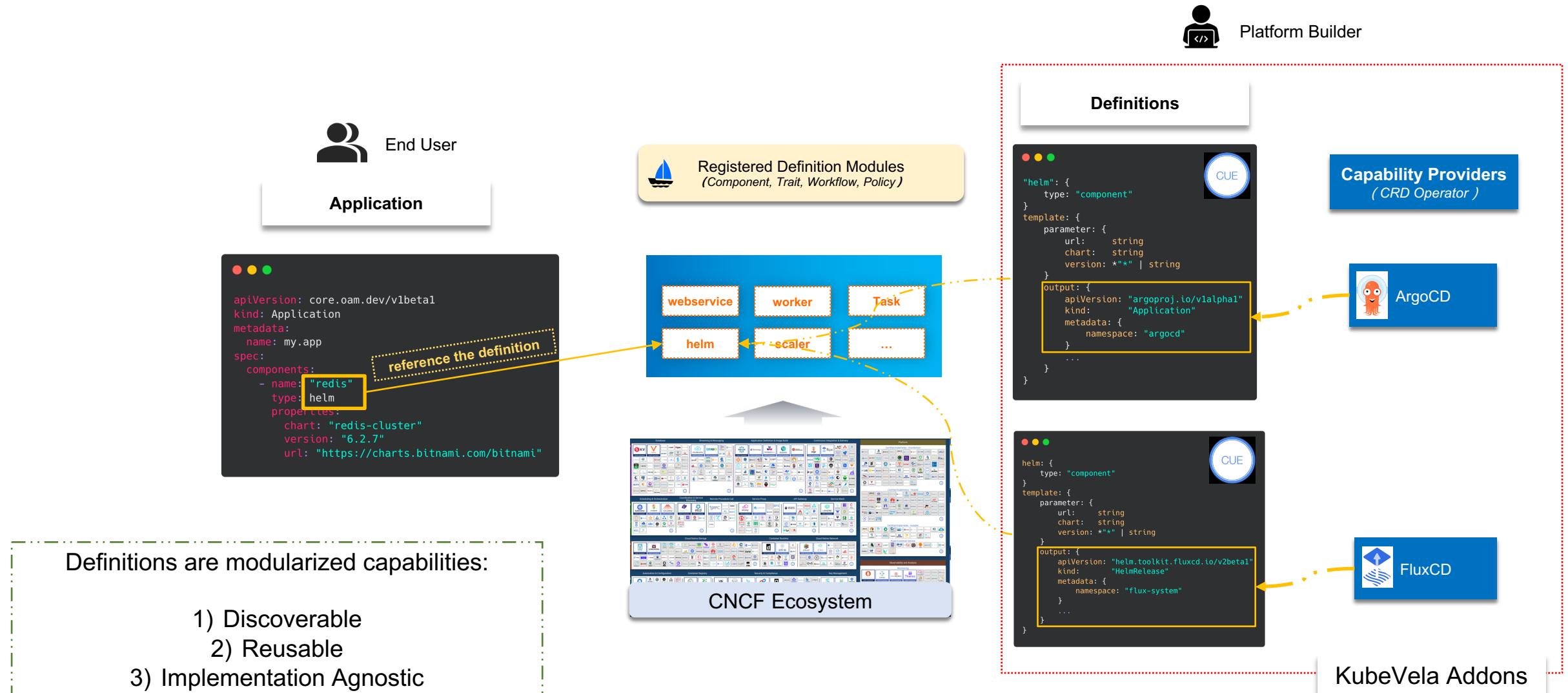
➤ SLO Trait

```
components:
  - name: component1
    type: webservice
    properties:
      cpu: "1"
      memory: 200Mi
      vmlist:
        - oam-9898Jkjkj-002
    traits:
      - type: SLO
        properties:
          indicator:
            metadata:
              name: webservice
              displayName: webservice
            spec:
              ratioMetric:
                counter: true
                good:
                  metricSource:
                    type: metrics
                    spec:
                      query: sum:trace.http.request.hits.by_http_status{http.status_code:200}.as_count()
              total:
                metricSource:
                  type: metrics
                  spec:
                    query: sum:trace.http.request.hits.by_http_status{*}.as_count()
        objectives:
          - displayName: Foo Total Errors
            target: 0.98
```

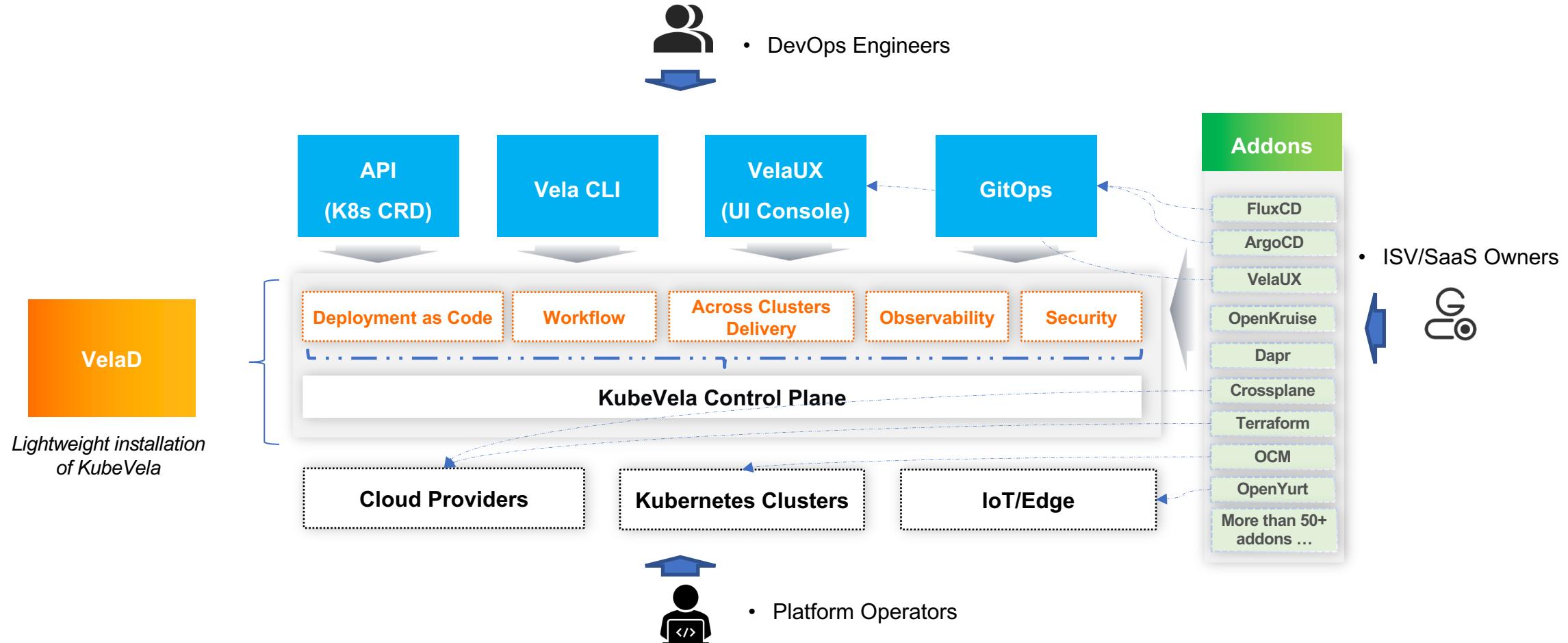
KubeVela as Application Uniform Control Plane



How KubeVela extension works ?

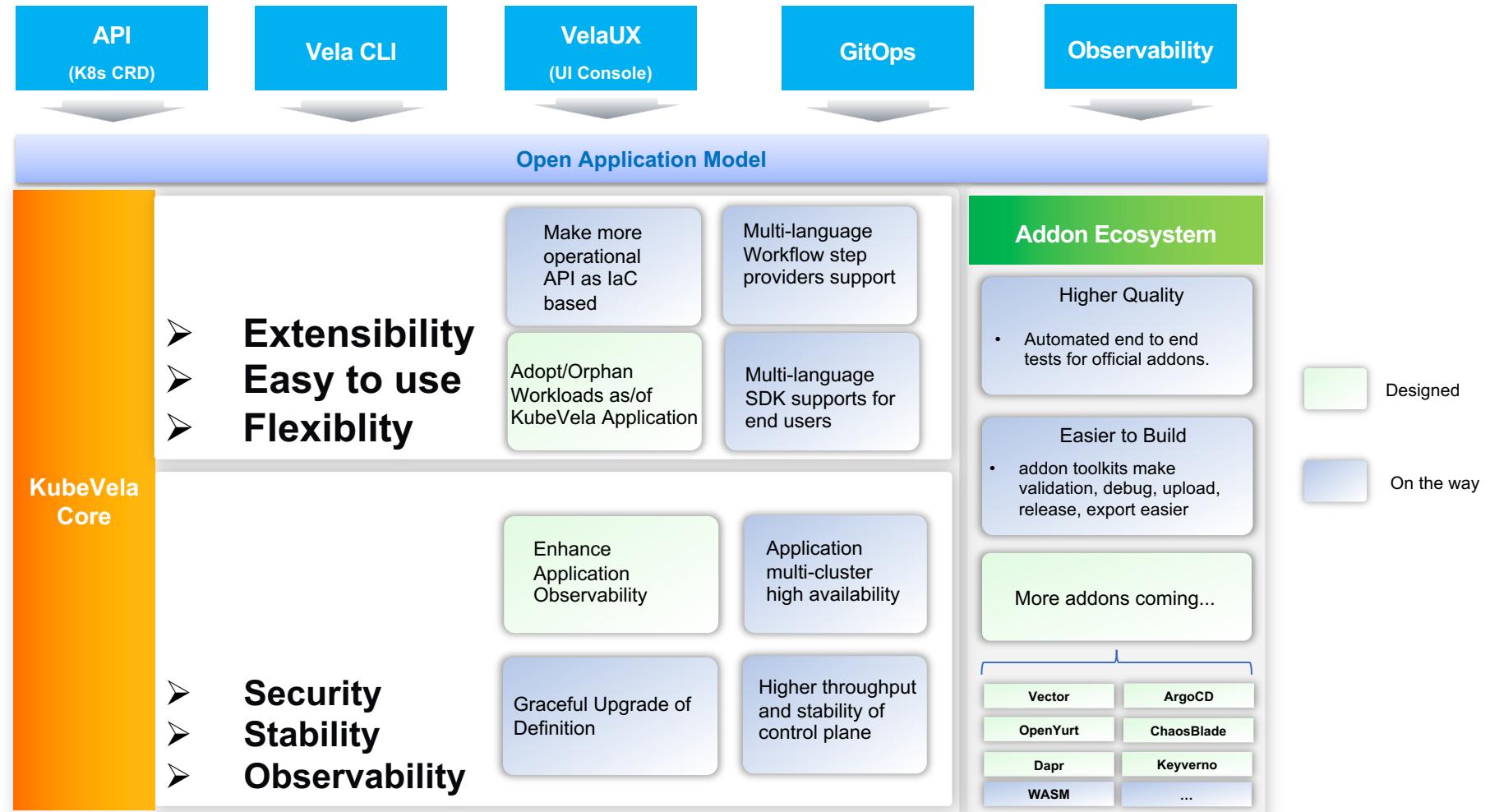


How KubeVela built on top of the extensibility ?



1. Install KubeVela with VelaD.
2. Show automated observability powered by addons.
3. Extend a new component type.
4. Build clickhouse as an addon.

KubeVela Community Roadmap





Please scan the QR Code above to
leave feedback on this session