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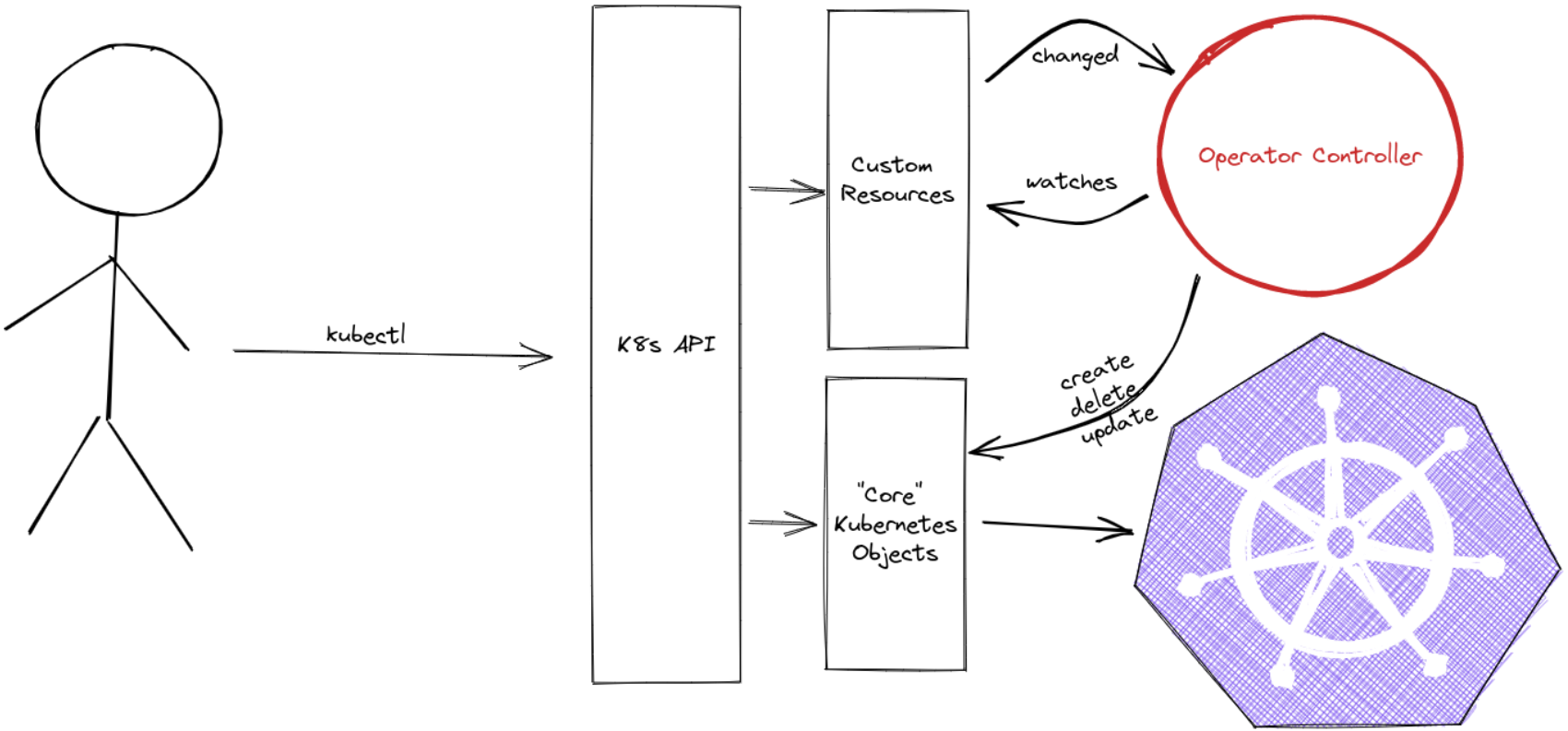
Kubernetes
made simpler
with K8s Operators

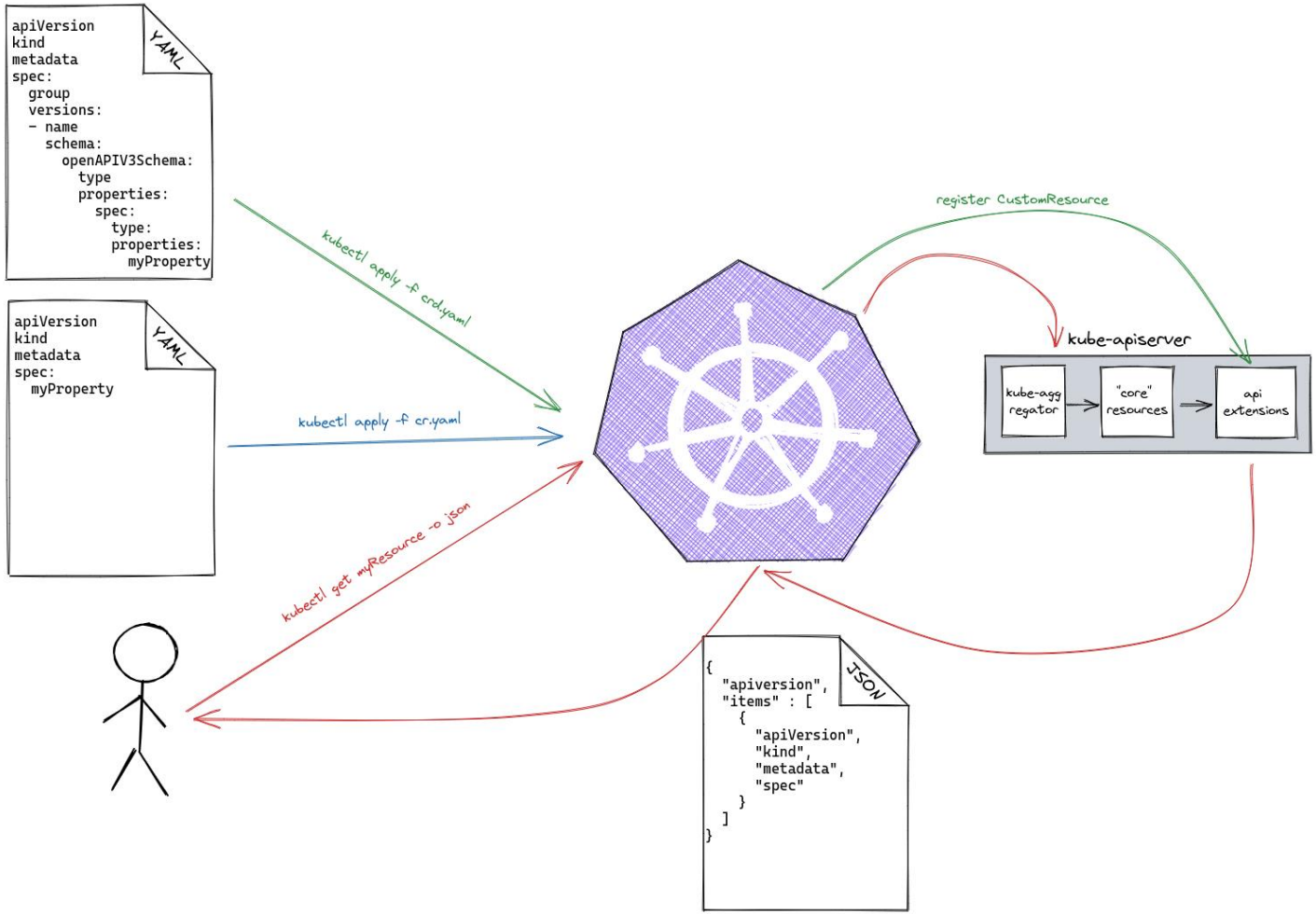
Agenda

1. Operator – What is that?
   - Custom Ressource Definition
   - Controllers
2. Working with existing operators
   - Finding
   - Deploying
   - Using
3. Developing your own operator
   - Operator SDK using helm
   - Java using fabric8
4. Recap

What's a K8s operator

About K8s extendability, CRDs and Aggregation Layers


kubectl
K8s API
Custom Resources
changed
watches
Operator Controller
create
delete
update
"Core" Kubernetes Objects


YAML
apiVersion
kind
metadata
spec:
group
versions:
- name
schema:
openAPIV3Schema:
type
properties:
spec:
type:
properties:
myProperty
YAML
apiVersion
kind
metadata
spec:
myProperty
kubectl apply -f crd.yaml
kubectl apply -f cr.yaml
kubectl get myResource -o json
register CustomResource
kube-apiserver
kube-aggregator
"core" resources
api extensions
JSON
{
"apiversion",
"items" : [
{
"apiVersion",
"kind",
"metadata",
"spec"
}
]
}

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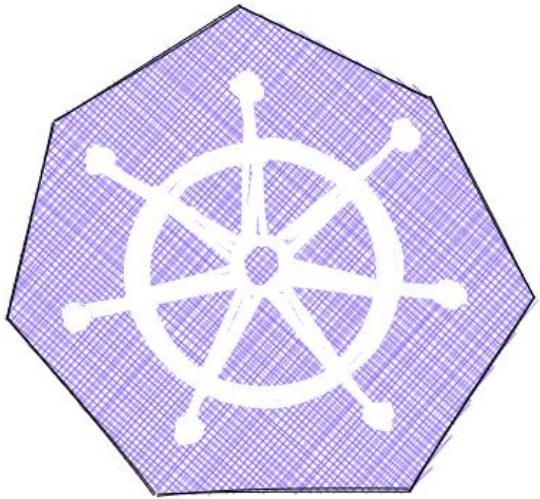
How does this help us?

Use existing operator

Manage cloud resources from within your K8s cluster

Write your own

Bundle your deployments / Toolings in one operator

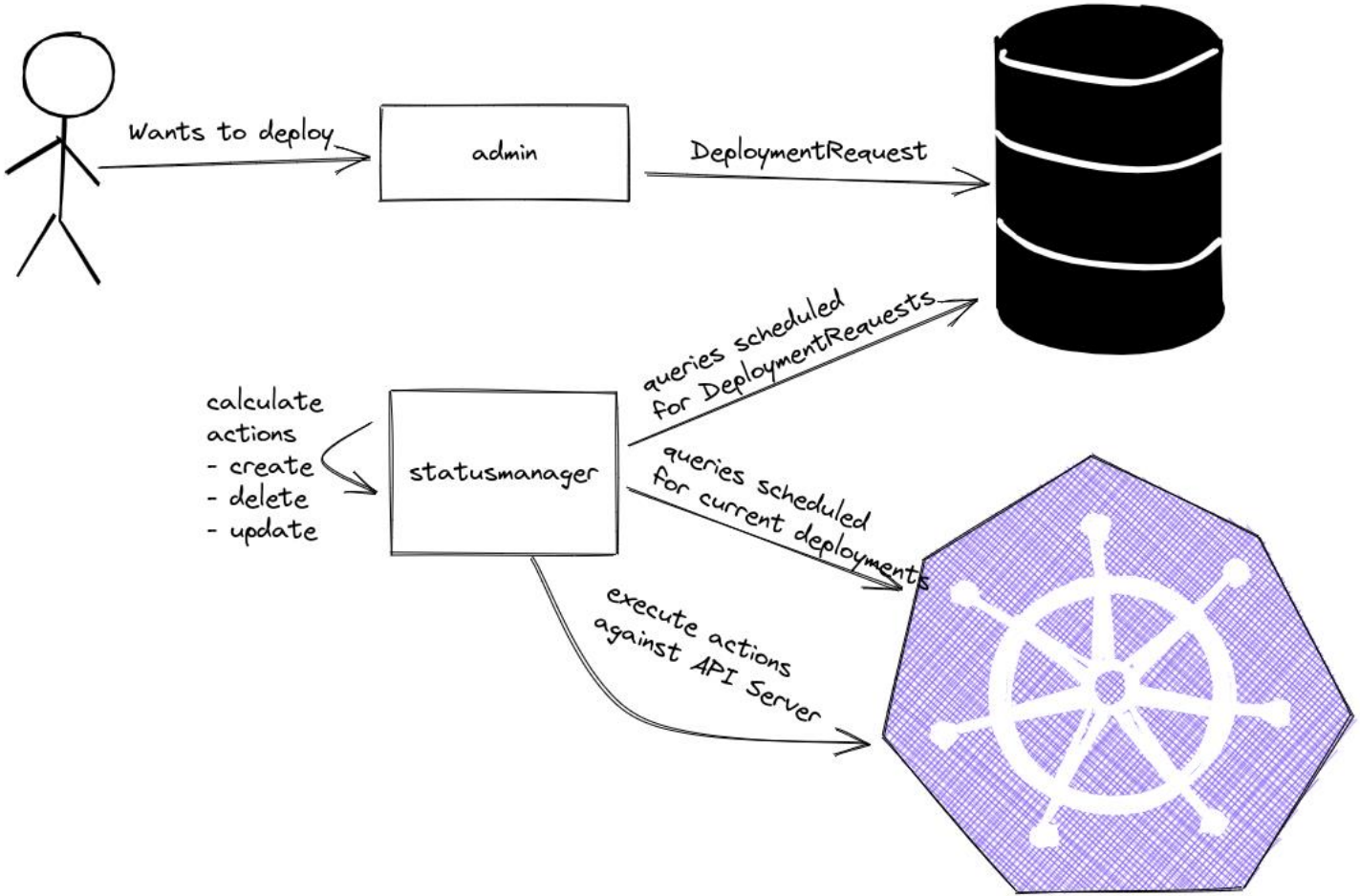


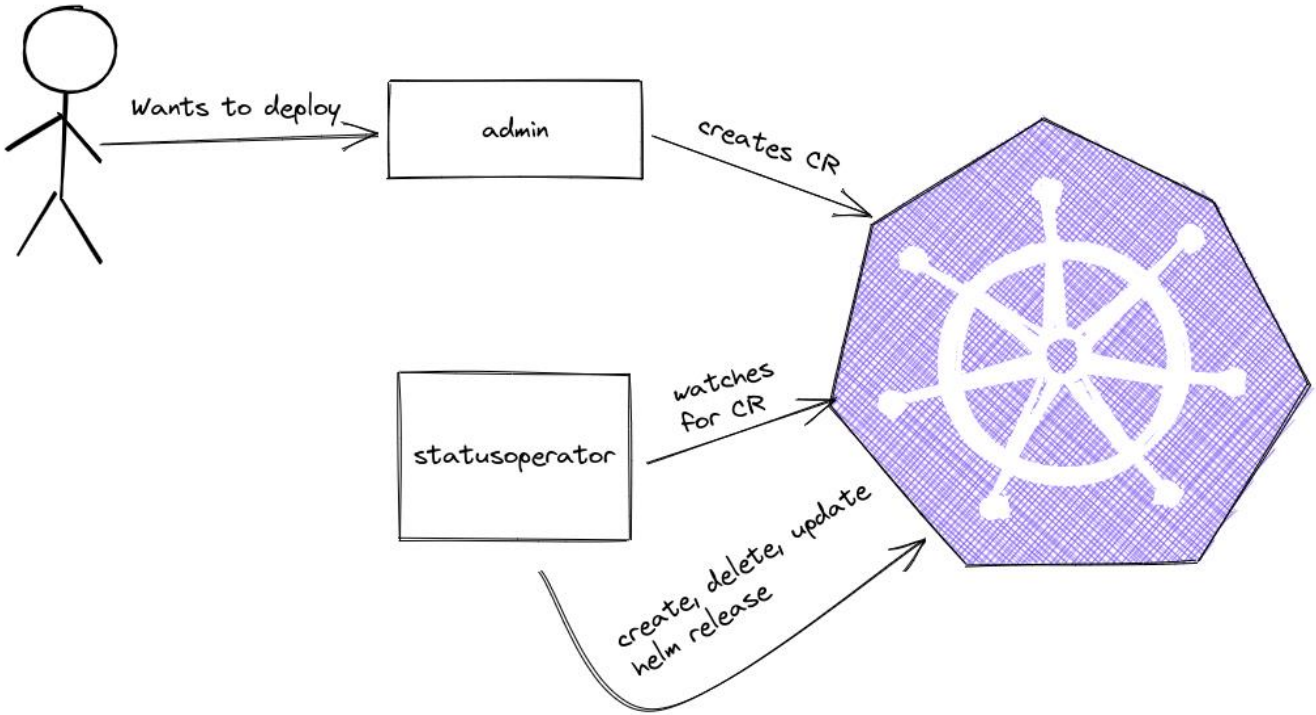
Working with operators

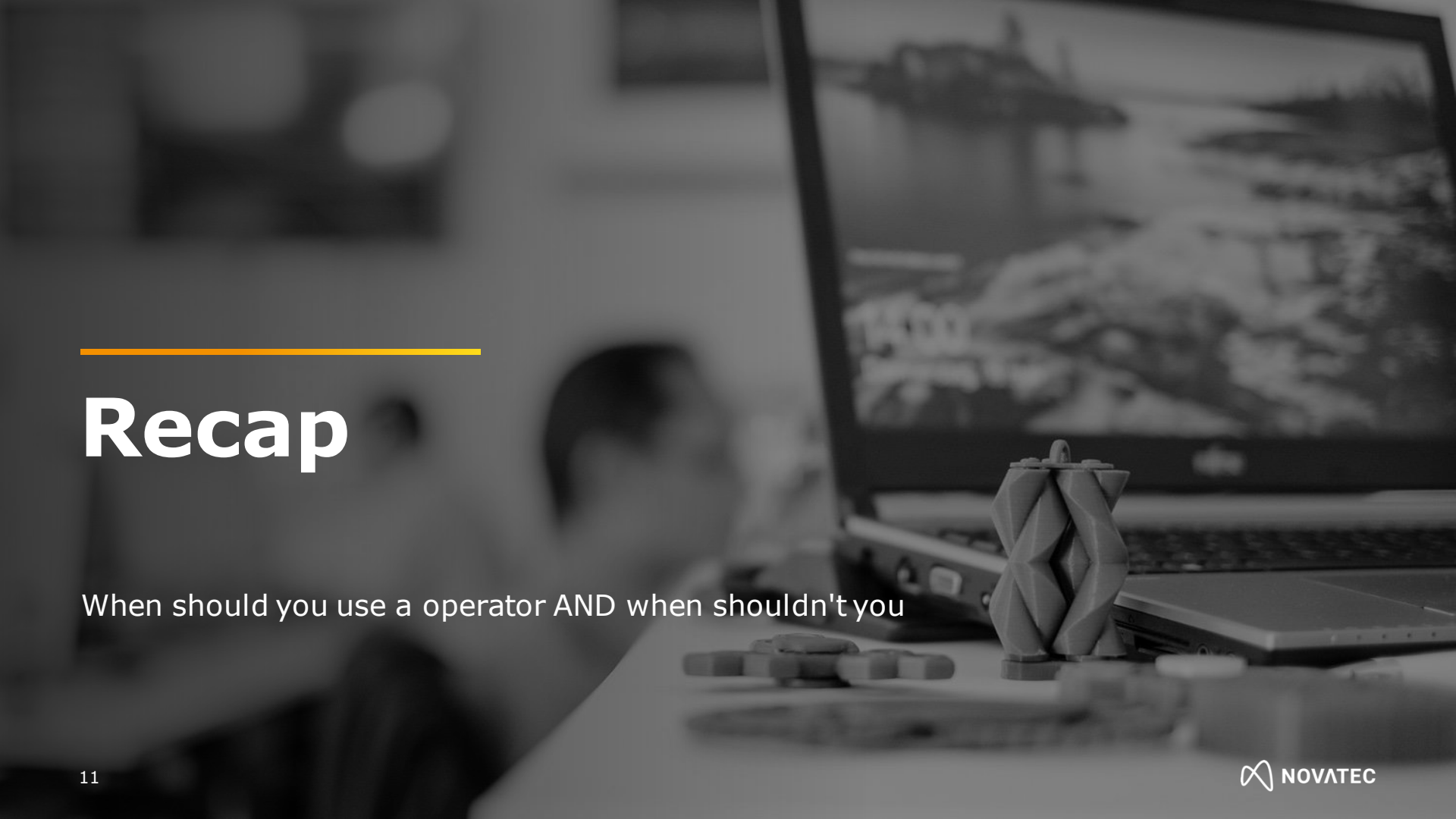
Finding, deploying and using operators

Developing your operator

Operator SDK and Helm or fabric8 and Java


Wants to deploy
admin
DeploymentRequest
queries scheduled
for DeploymentRequests
calculate
actions
- create
- delete
- update
statusmanager
queries scheduled
for current deployments
execute actions
against API Server


Wants to deploy
admin
creates CR
watches for CR
statusoperator
create, delete, update helm release



Recap

When should you use a operator AND when shouldn't you

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Recap

When / Why to use

- Ease of use
  - Using existing Operators
  - Deploying operators as K8s Deplyoments
- Simplifying Cloud
  - Common understandment of Cloud resources
  - Bundle Cloud Resources and Application
- K8s Native Applications
  - Interact with your Plattform
  - Integrate in K8s to use full potential

When / Why not to use

- Maintenance
  - Who is responsible for operator
- Development
  - Treat your operator as a feature, which costs development time
  - Less focus on Business Logic
- Trust the Operator
  - RBAC setup and vast permissions for Operator to work needed
  - What does the operator do behind the scence -> Strip down "magic"

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