

The logo graphic for ESCAPE features a stylized blue starburst at the top, a thin blue orbital line curving around a small yellow circle, and another thin blue orbital line curving around a small blue circle.

# ESCAPE

European Science Cluster of Astronomy &  
Particle physics ESFRI research Infrastructures

## IVOA Execution Planner (EP) aka - CanIDoThis ?

IVOA interop, Nov 2021

D.Morris, University of Edinburgh

ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.



Where we are : Lots of different types of task



kubernetes

Different interfaces

X

Different communities

X

Different configuration

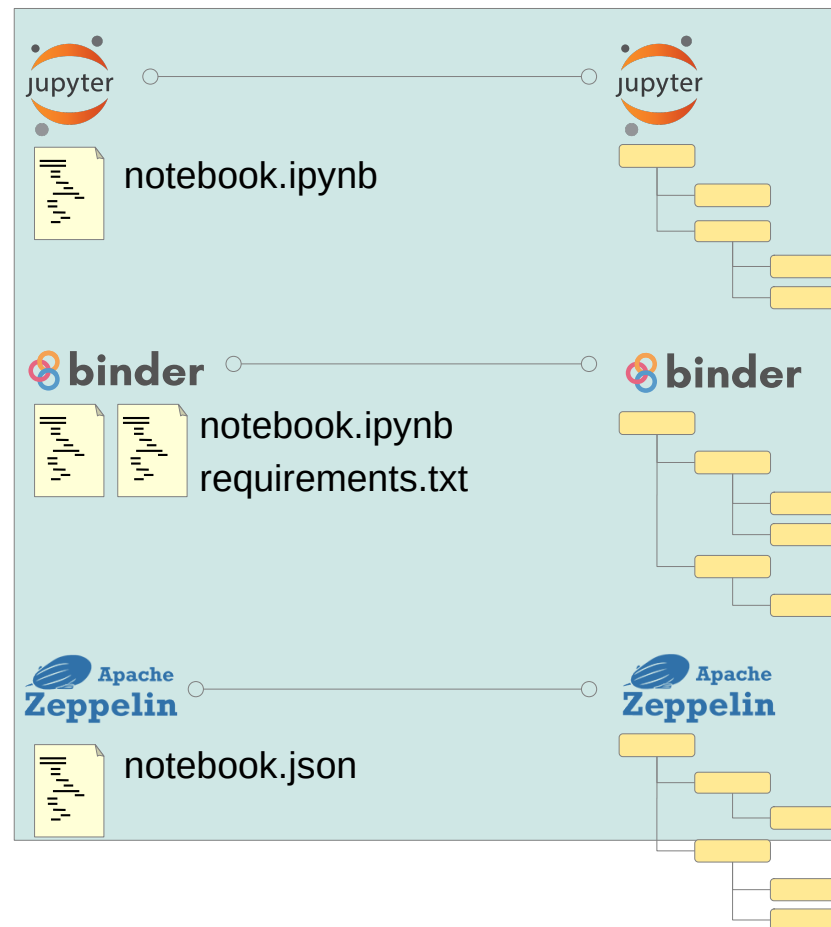
X

Different authentication

General case, a  
single notebook  
to define a task

The notebook  
content is task  
dependent

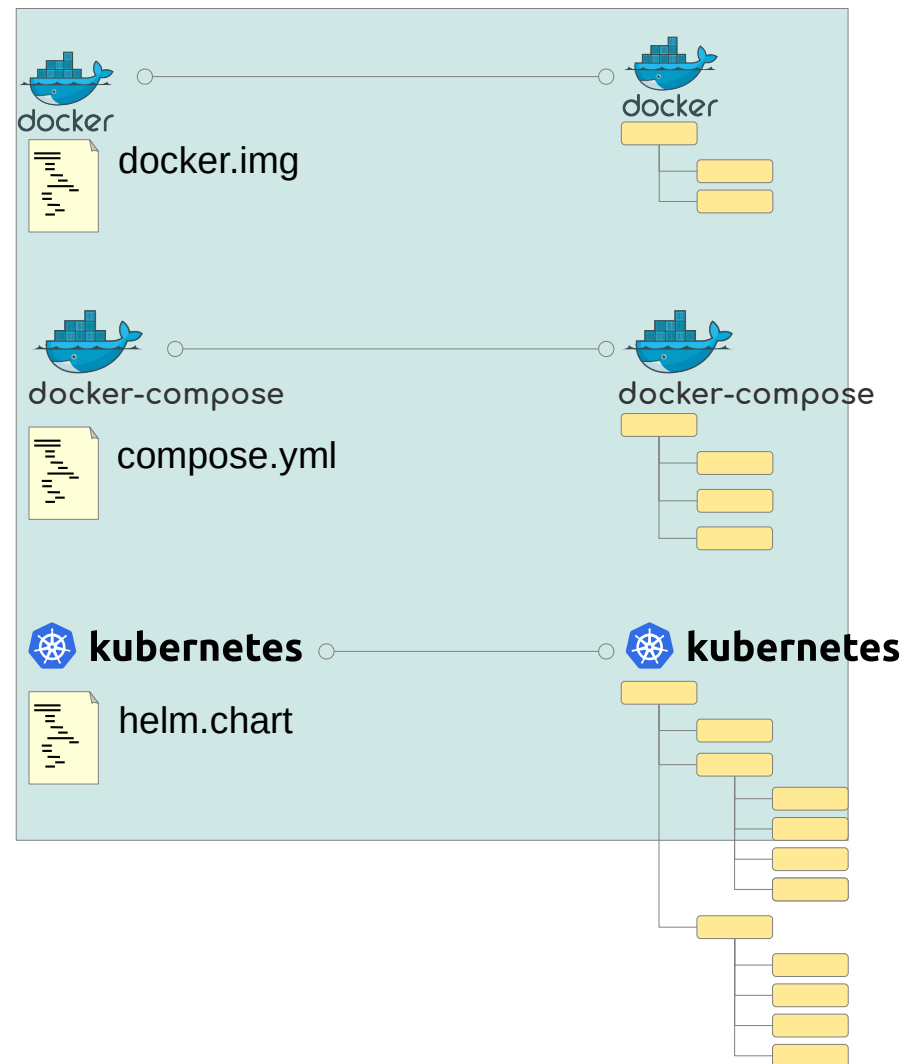
## Notebook platforms



General case, a  
single config file  
to define a task

The config file  
content is task  
dependent

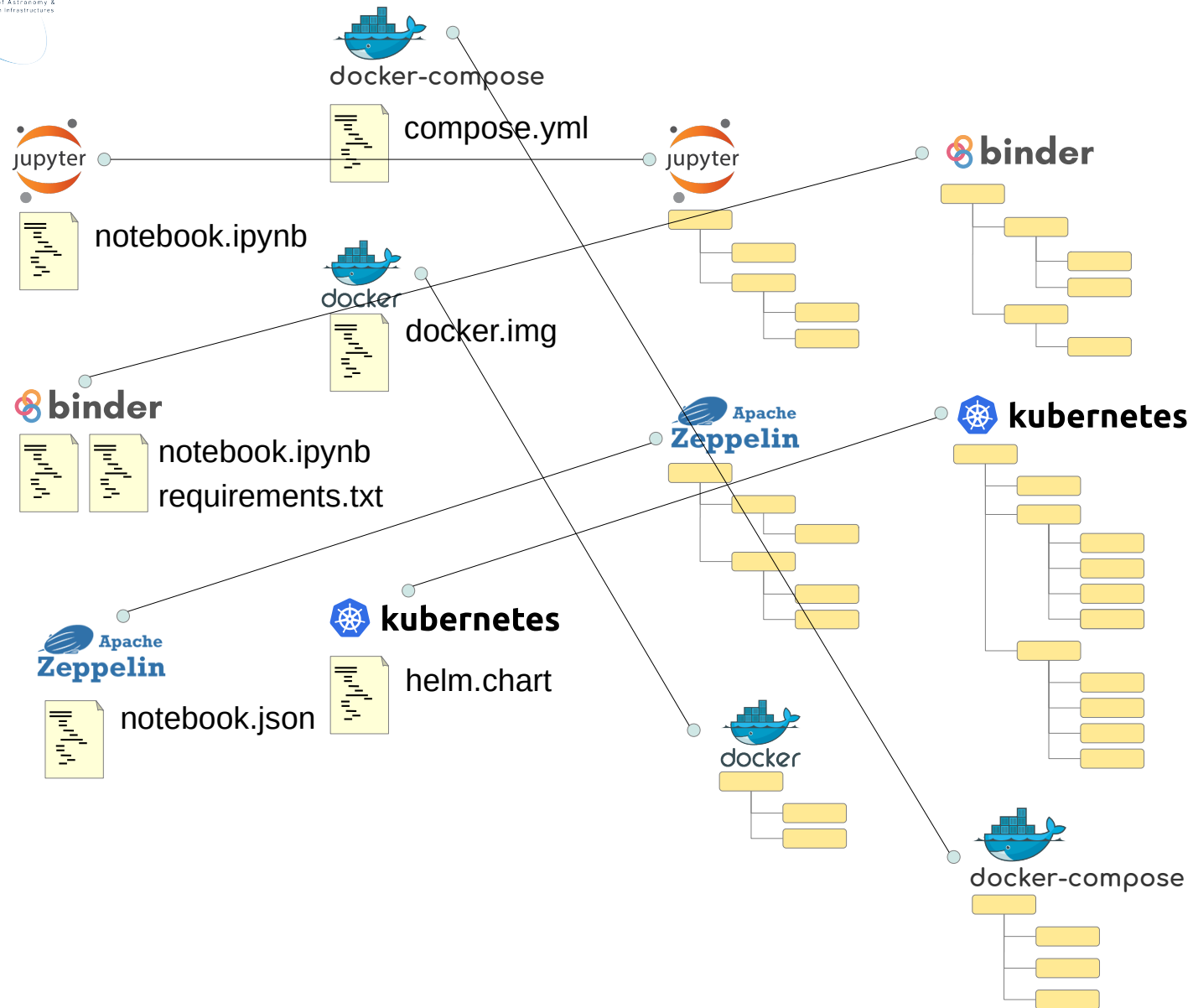
## Container platforms

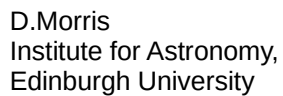
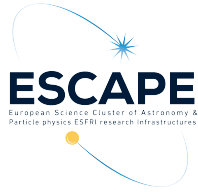




Reality isn't  
lined up as  
nicely

Reality is  
messy



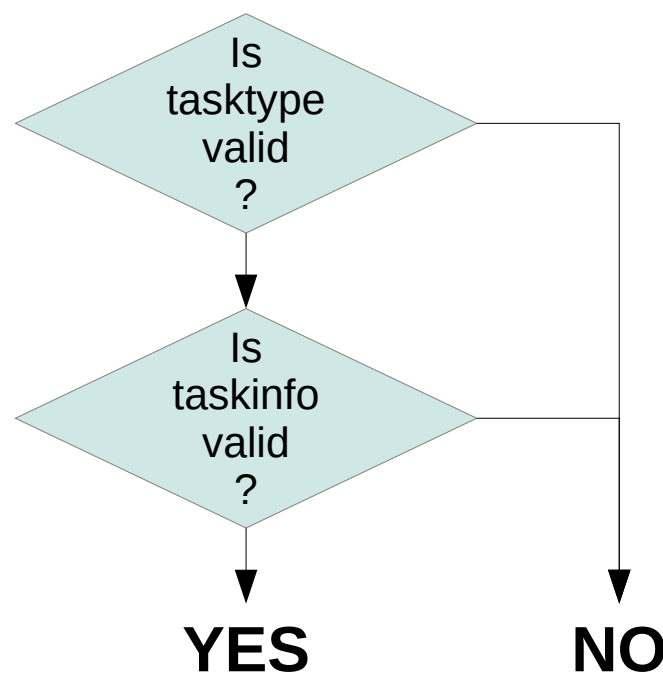


## Simple HTTP request



## Simple HTTP request

```
{
  "tasktype": "uri://docker-container",
  "taskinfo": {
    "image": "docker.io/example:1.0"
  }
}
```





## Simple HTTP request

Can [I] run [this] <task-type> ?

Identity provided by IVOA SSO

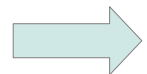
Task details provided in POST data

## Simple JSON response



**YES** | NO

```
{  
  "reponseword": "YES",  
  "servicetype": "uri://docker-uws",  
  "serviceinfo": {  
    "endpoint": "http://example.org/dkuws",  
  }  
}
```



YES | **NO**

```
{  
  "reponseword": "NO",  
}
```



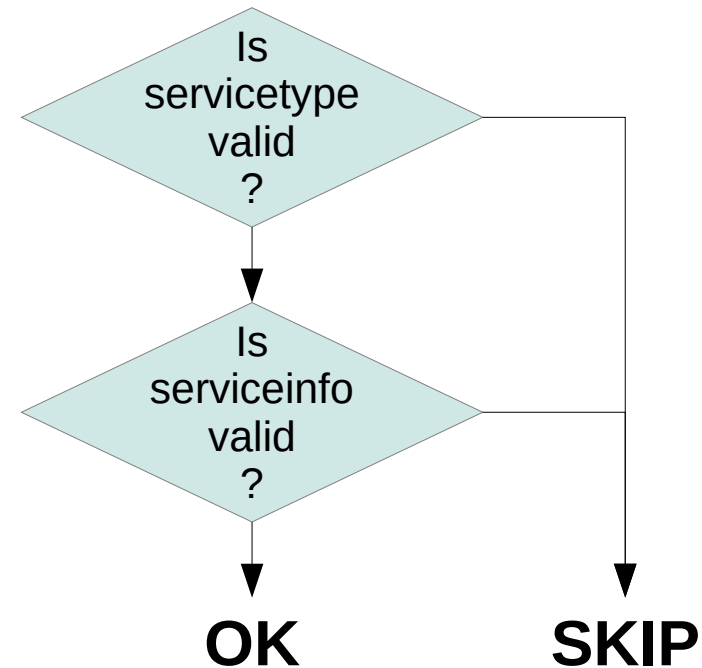
## Simple HTTP request

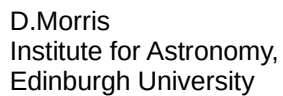


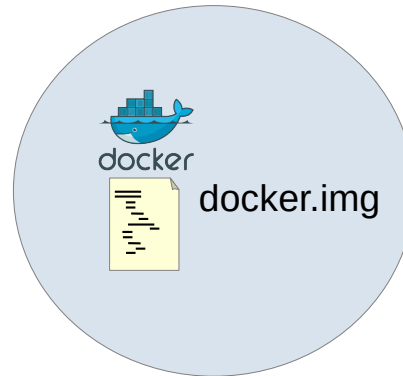
## Simple JSON response

```
{
  "reponseword": "YES",
  "servicetype": "uri://docker-uws",
  "serviceinfo": {
    "endpoint": "http://example.org/dkuws",
  }
}
```

```
{
  "reponseword": "NO",
}
```





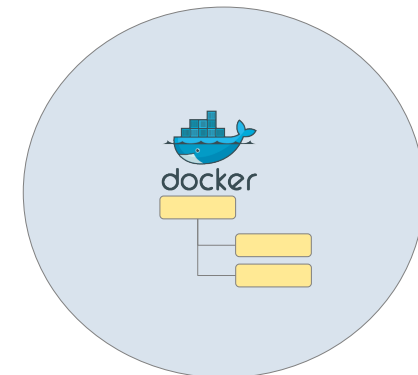


```
{  
  "tasktype": "uri://docker-container",  
  "taskinfo": {  
    "image": "docker.io/example:1.0"  
  }  
}
```

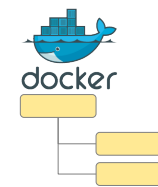
```
{  
  "reponseword": "YES",  
  "servicetype": "uri://docker-uws",  
  "serviceinfo": {  
    "endpoint": "http://example.org/uws",  
  }  
}
```

Task-info and service-info are type specific

Solved by the docker-uws community



# Resource requirements



```
{
  "tasktype": "uri://docker-container",
  "taskinfo": {
    "image": "docker.io/example:1.0"
  }
}
```


```
"resources": {
  mincores: 8
  maxcores:
  minmemory: 8G
  maxmemory:
  minduration: 10m
  maxduration:
}
}
```

```
{
  "reponseword": "YES",
  "servicetype": "uri://docker-uws",
  "serviceinfo": {
    "endpoint": "http://example.org/uws",
  }
}
```

```
"resources": {
  mincores: 8
  maxcores: 10
  minmemory: 8G
  maxmemory: 10G
  minduration: 10m
  maxduration: 20m
}
}
```

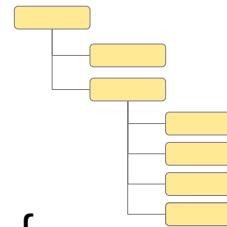
# Gaia ML analysis example

 **kubernetes**

 helm.chart

```
{
  "tasktype": "uri://kubernetes-helm",
  "taskinfo": {
    "chart": "http:///example.org/helm.chart"
  }
  "resources": {
    mincores: 220
    maxcores:
    minmemory: 360G
    maxmemory:
    minduration: 9h
    maxduration:
  }
}
```

 **kubernetes**



```
{
  "reponseword": "YES",
  "servicetype": "uri://kubernetes-helm",
  "serviceinfo": {
    "endpoint": "http://example.org/kws",
  }
  "resources": {
    mincores: 220
    maxcores: 240
    minmemory: 360G
    maxmemory: 400G
    minduration: 9h
    maxduration: 9h30m
  }
}
```

# IVOA notes in progress

## IVOA Execution Planner

Execution Planner design  
+ Prototype implementation in development

Dave Morris  
Sara Bertocco

## UWS Container Execution Service

UWS Docker container execution service  
+ Prototype implementation in development

Dave Morris  
Sara Bertocco