



ESCAPE

European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures

Execution Planner Interface (EPI) aka - CanIDoThis ?

IVOA interop, May 2021

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Where we are : Lots of different types of task



Different interfaces

X

Different behavior

X

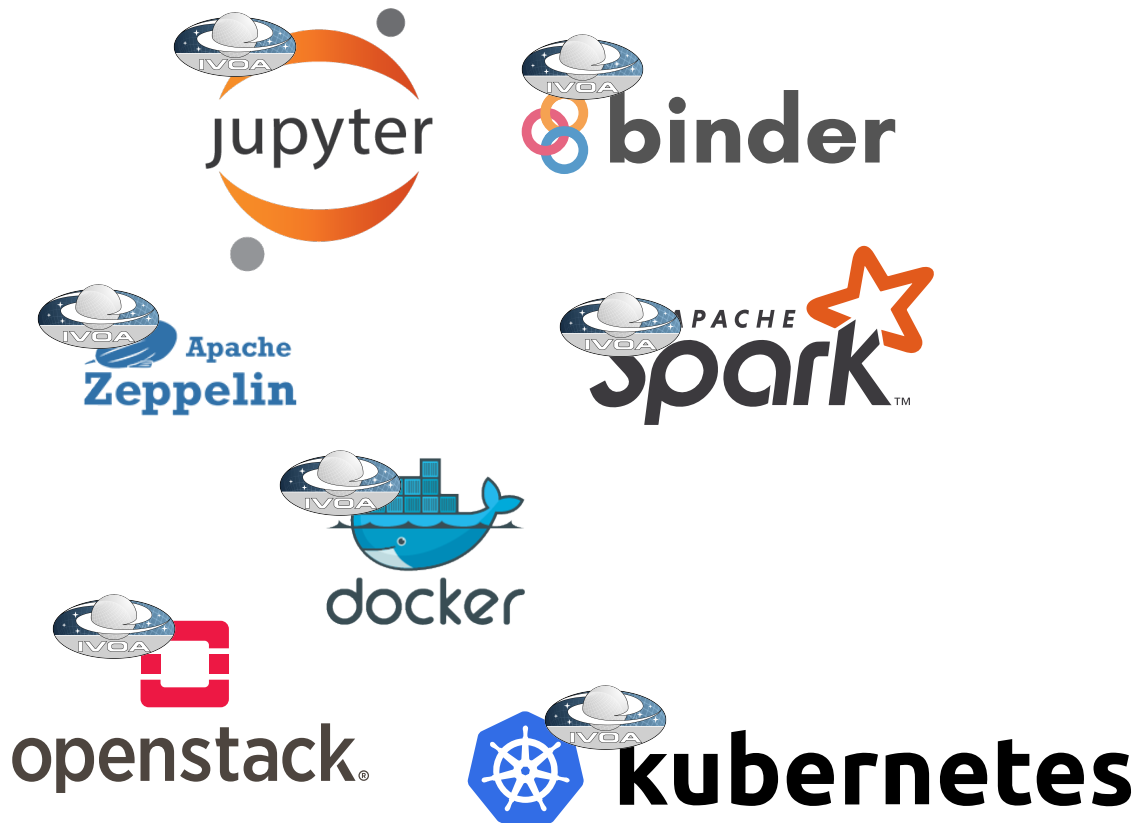
Different configuration

X

Different authentication



Where we want to be : inter-operable IVOA interfaces



IVOA interfaces

+

Consistent behavior

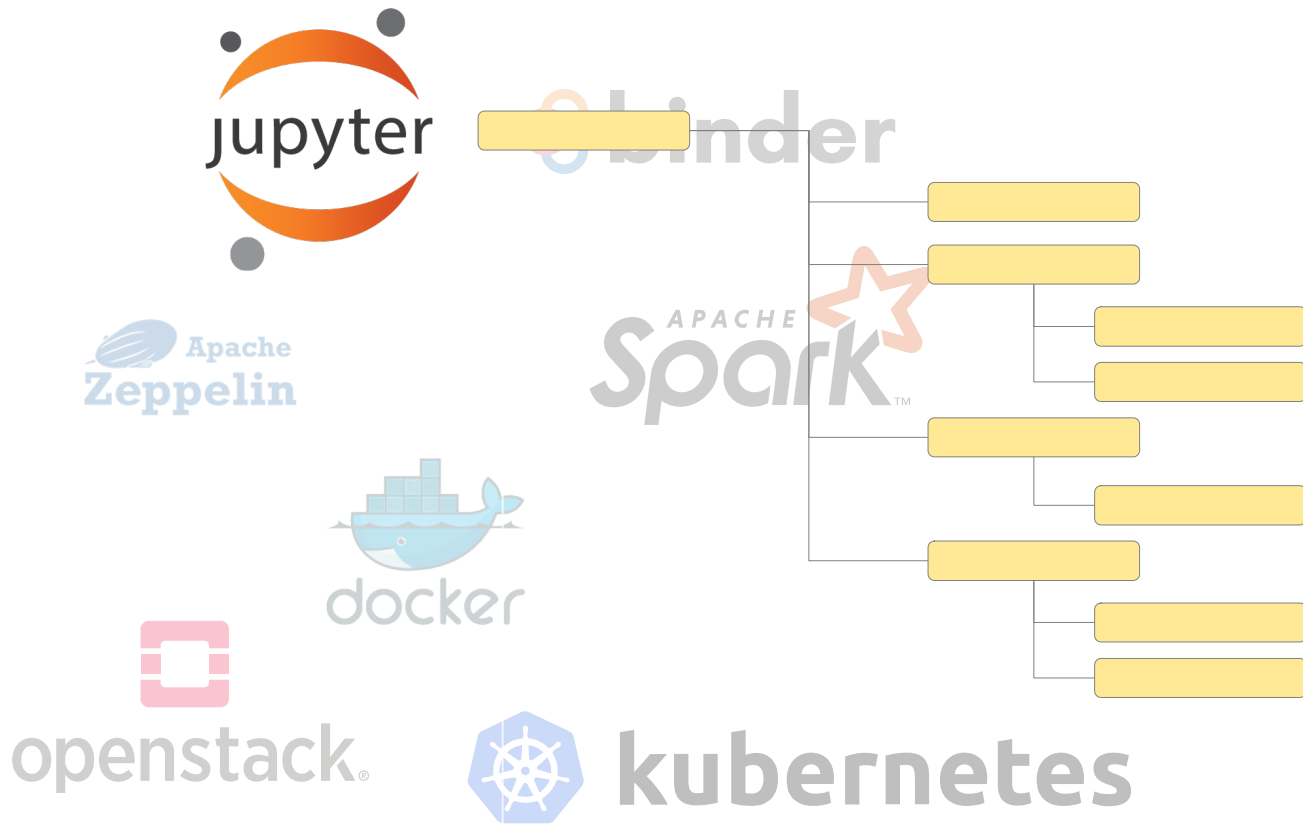
+

Common configuration

+

Standard authentication

Do we want to adopt everything from all the 3rd party interfaces ?



Complex interfaces

X

Complex behavior

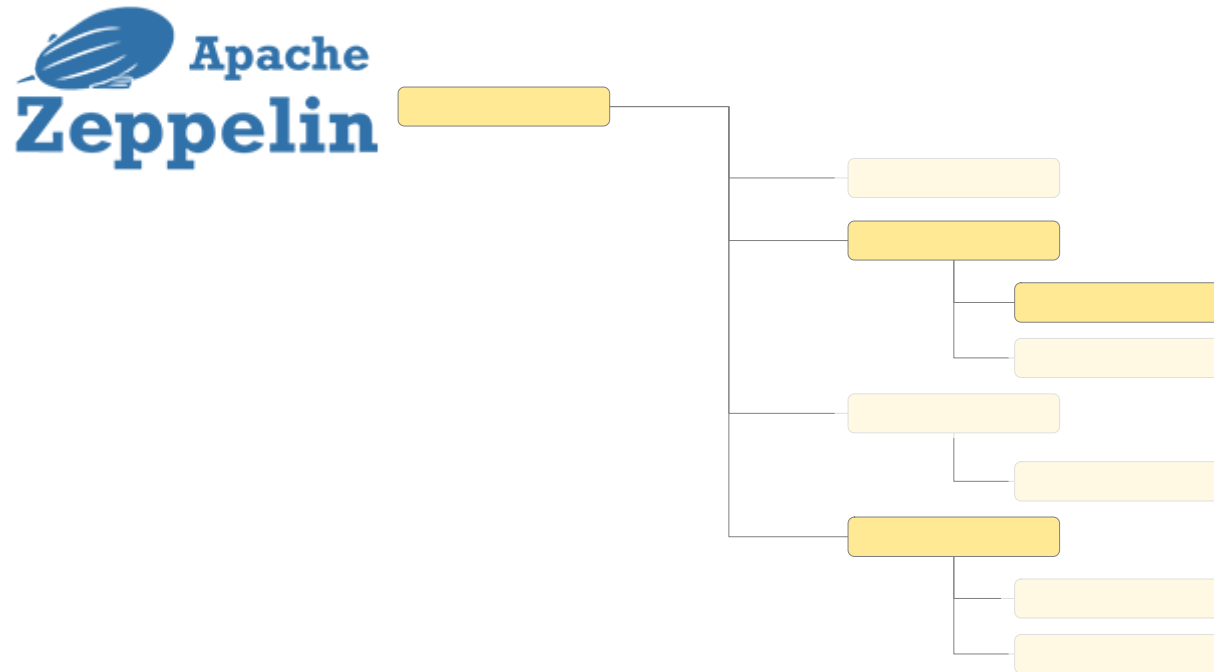
X

Multiple features

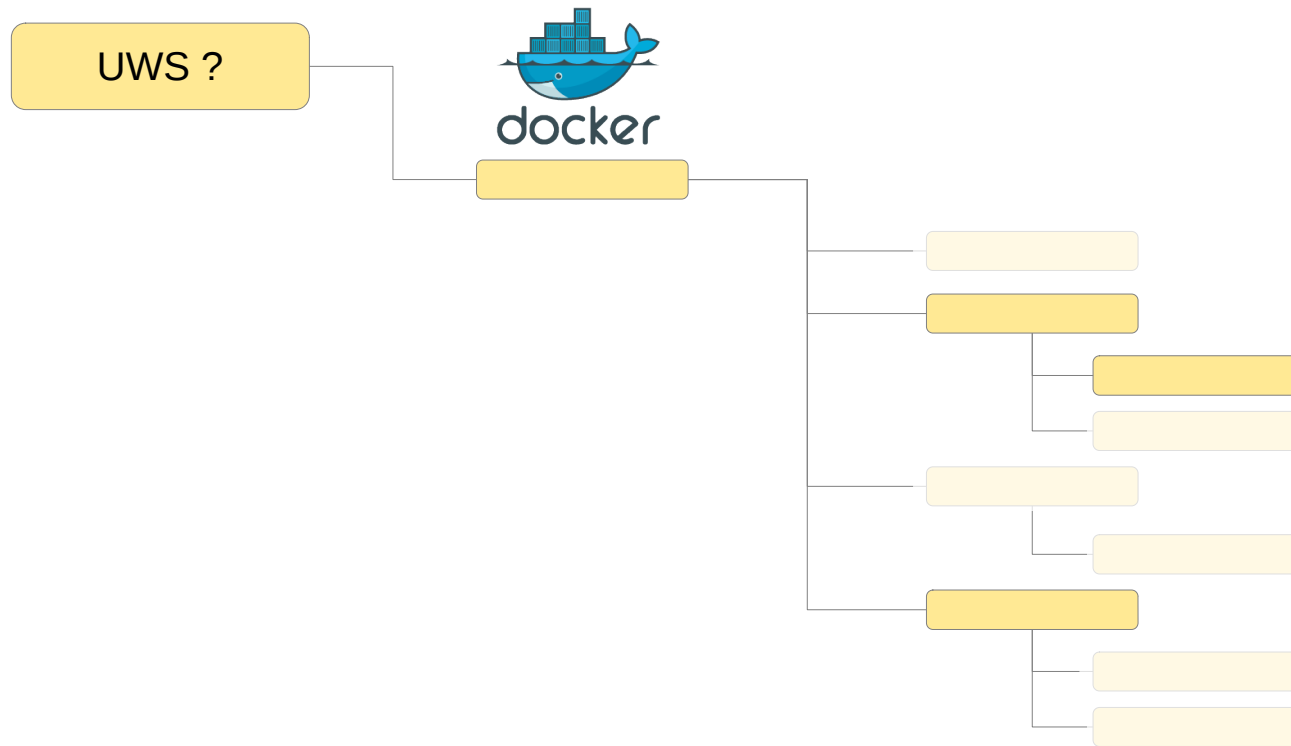
X

Multiple versions

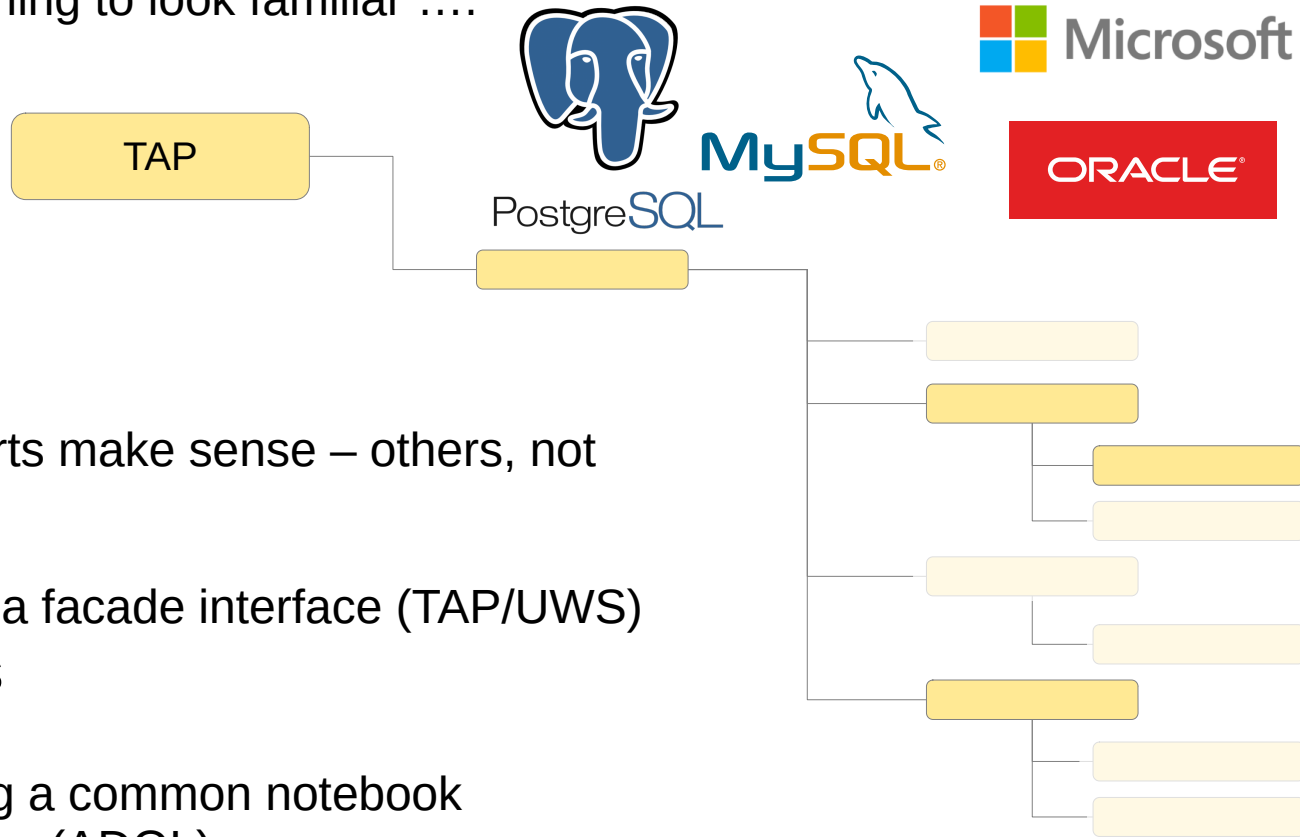
Constrain the variables - select specific parts of the functionality



Constrain the interface – add a facade in front



Beginning to look familiar



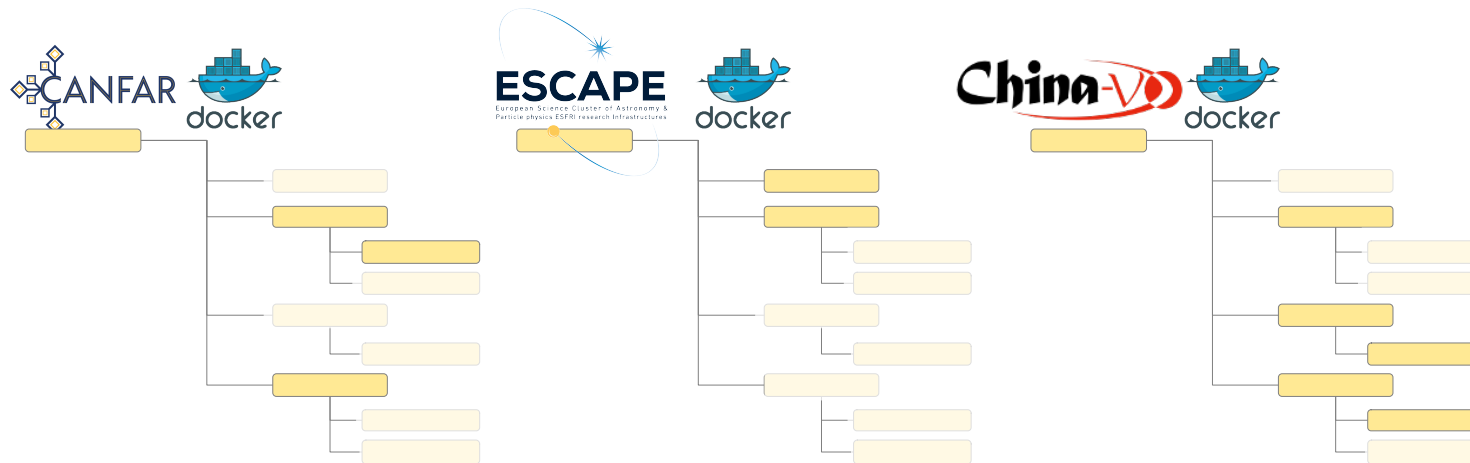
Some parts make sense – others, not

- Adding a facade interface (TAP/UWS)
 - yes

- Defining a common notebook language (ADQL)
 - no



To start with, each site will support a different subset of functionality



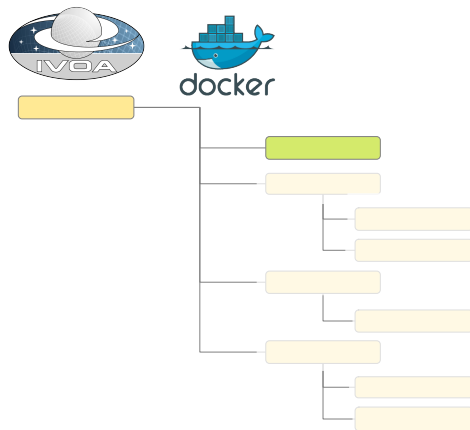
We can use a URL to identify each particular subset

<http://cadc.ca/canfar-docker>

<http://escape.eu/docker-launcher>

<http://china-vo.org/docker-interface>

Can we define minimal sets ?



And give them URLs to identify them

<http://ivoa.net/simple-jupyter-1.0>

<http://ivoa.net/simple-docker-1.0>

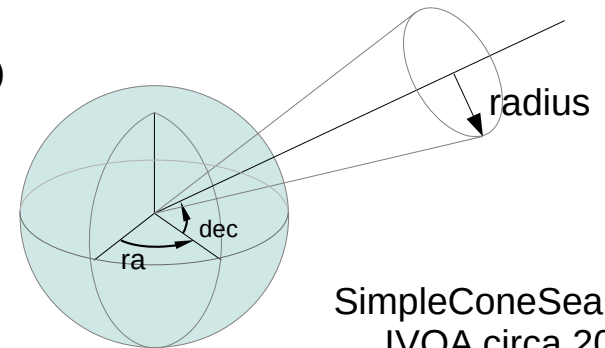
<http://ivoa.net/simple-kubernetes-1.0>

Something as simple as this ?

RA = 170° (deg)

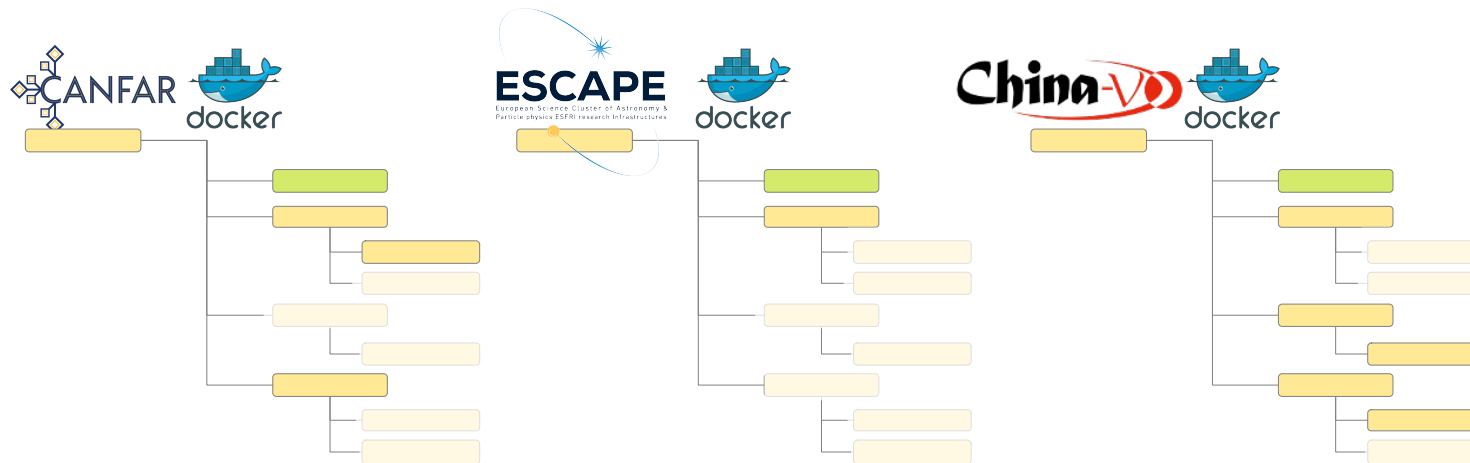
DEC = 25° (deg)

SR = 30° (deg)



SimpleConeSearch
IVOA circa 2003

Sites can support the simple form along side their own



Using the URLs to declare which functionality they support

<http://ivoa.net/simple-docker-1.0>

<http://cadc.ca/canfar-docker>

<http://ivoa.net/simple-docker-1.0>

<http://escape.eu/docker-launcher>

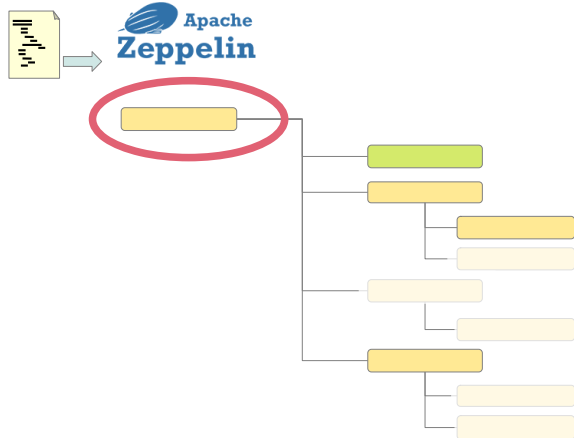
<http://ivoa.net/simple-docker-1.0>

<http://china-vo.org/docker-interface>

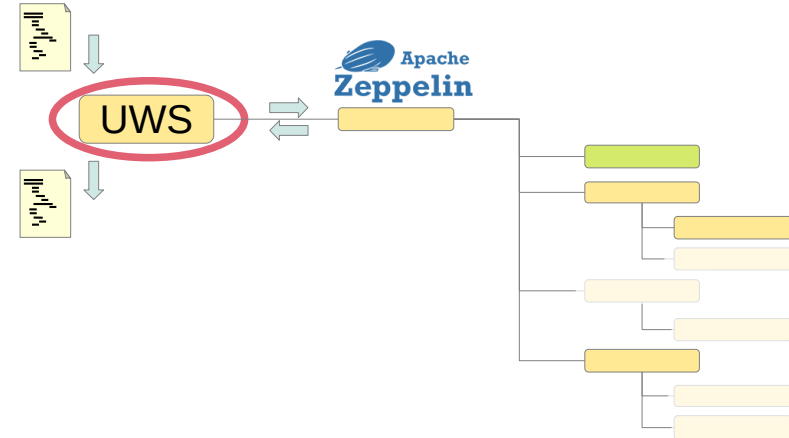
Going back to TAP, there is another aspect – synchronous or asynchronous ?

The equivalent for a science platform would be interactive or batch

For interactive - the response would contain the endpoint of a live service with the task loaded and ready to run



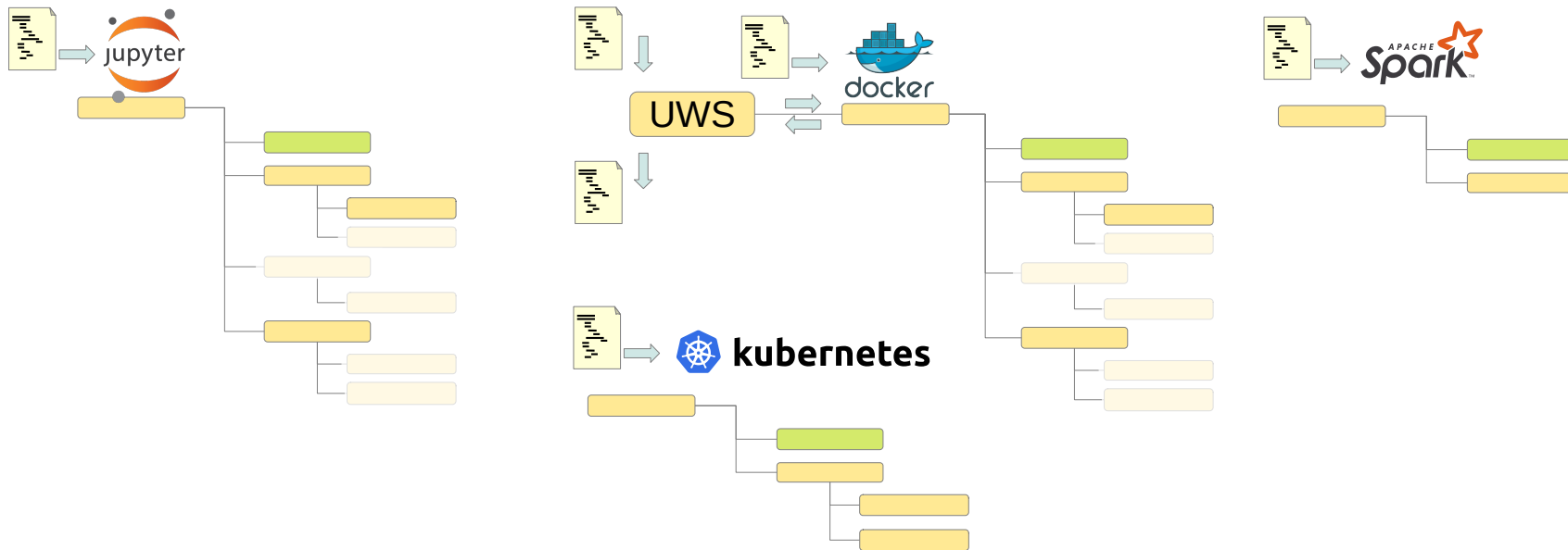
For batch – you send the task to an asynchronous service like UWS and it responds with the results when is done



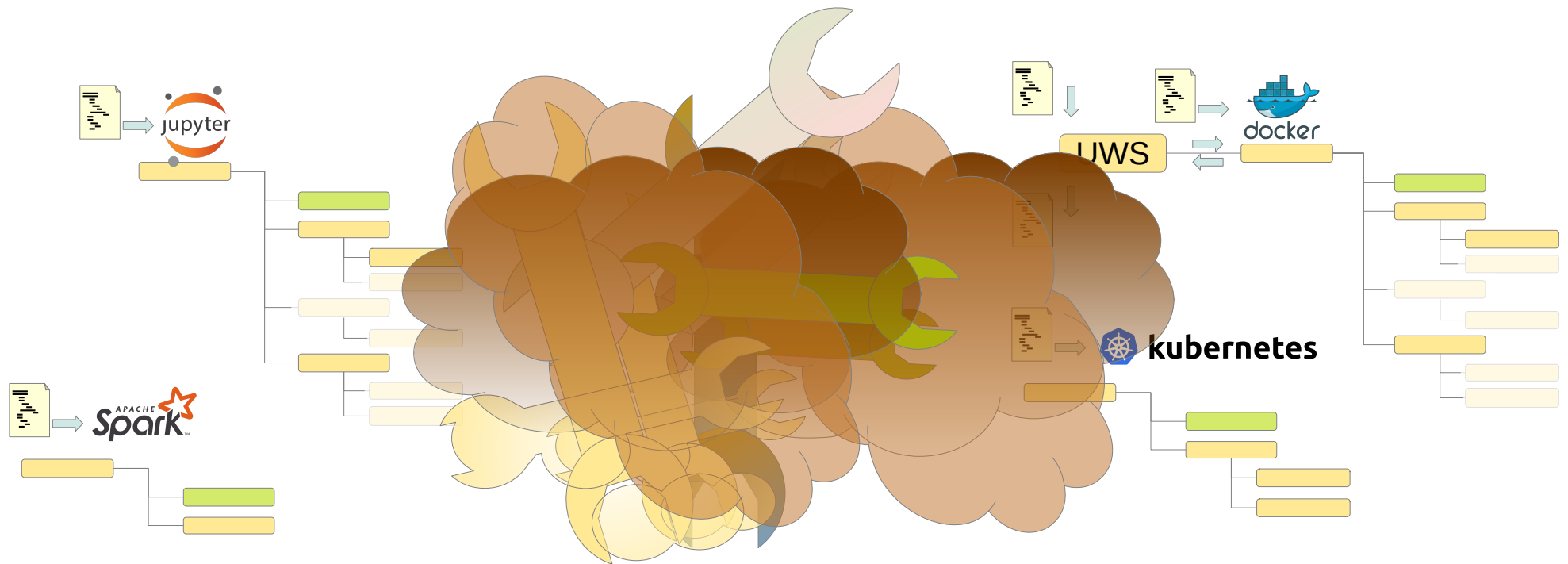
So, we have:

Lots of different types of task; Jupyter and Zeppelin notebooks, Docker containers, Kubernetes charts, Ansible roles, Python programs and Spark analyses.

Different subsets of functionality; run interactively or in batch mode ..



Starting to look like a bag of spanners



Start with a simple question:

Can you run a Jupyter notebook ?

Can you run a CANFAR Jupyter notebook ?

Can you run a CANFAR Jupyter notebook, interactively ?



Add a simple response

Can you run an ESCAPE Docker container, interactively ?

➡ **YES** | NO

Services : <http://node21.cloud.ed.ac.uk/docker-sync>
<http://node19.cloud.ed.ac.uk/docker-sync>
<http://node03.cloud.ed.ac.uk/docker-sync>

➡ YES | **NO**

Reason : <optional description of why not>

Simple, generic request | response

Can you run <task-type> <mode> ?

➔ **YES** | NO

Services[] - <url>
- <url>
- <url>

➔ YES | **NO**

Reason : <text>

Simple enough to be in the
service registration

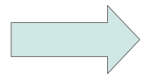
Capabilities[] - <task-type>, <mode>
- <task-type>, <mode>
- <task-type>, <mode>

Identity and task specific request

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

Identity provided by IVOA SSO

Task details provided as <URL>

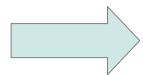


YES | NO

Services[] - <url>
- <url>
- <url>

Points to task specific details

Specific datasets and formats
e.g. Gaia eDR3 in parquet



YES | **NO**

Reason : <text>

Specific libraries

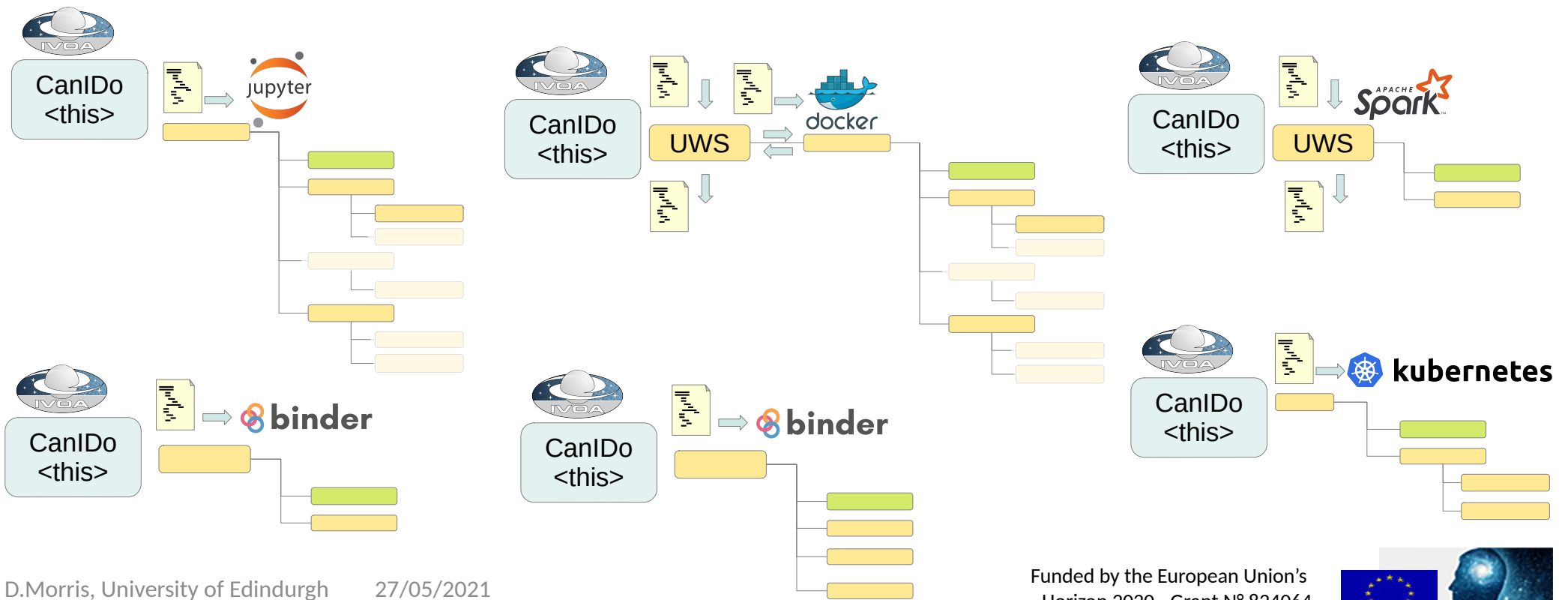
e.g. numpy==1.19.5
scipy==1.6.3



Different sites supporting different types of tasks

Some sites support common subset of functionality

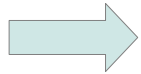
Simple entrypoint interface at each location





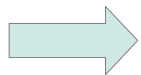
CanIDo <this>

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



YES | NO

Services[] - <url>
- <url>
- <url>



YES | **NO**

Reason : <text>

Simple **STATELESS** web service

- Identity provided by IVOA SSO
- Task type identified as <URL>
- Task details linked as <URL>

Technically possible to do some of this using UWS quote

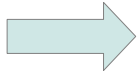
Requires a stateful web service, with storage for job state etc.





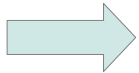
CanIDo <this>

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



YES | NO

Services[] - <url>
- <url>
- <url>



YES | **NO**

Reason : <text>

If we provide a proof of concept implementation, would you run it at your site ?

Is this enough to get us off the ground ?

