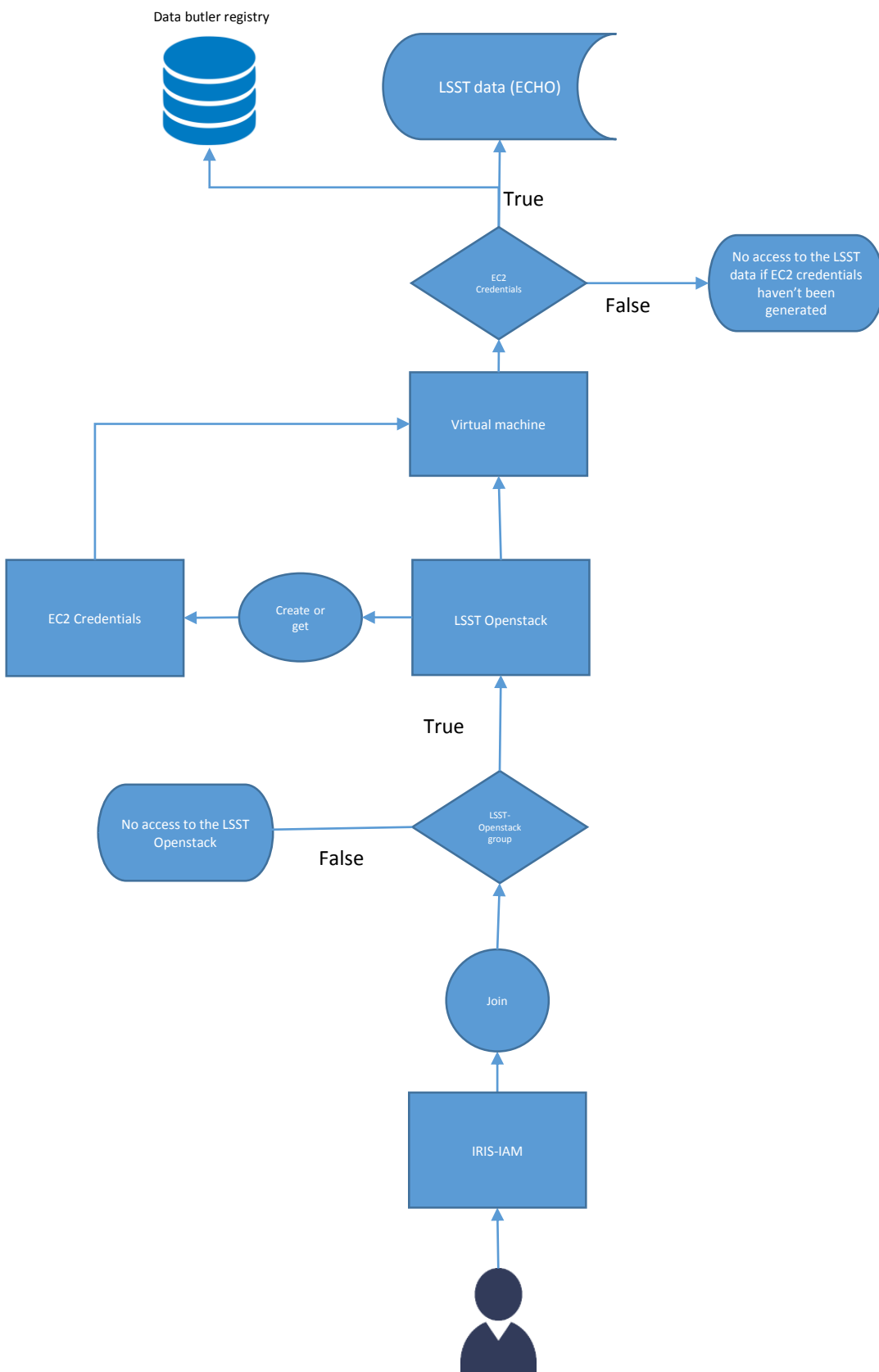# LSST (curating and serving astronomy survey images on the Echo (S3) Object Store):

- The science use case of the LSST data stored at RAL.
    - o Jupyter notebook
        - Investigating authorisation methods for the S3 object store buckets.
            - Giving out temporary S3 credentials

            - Hidden S3 credentials or alternative technology (keystone) that will give the user direct access (read only) to the bucket in S3 for their analyse.

- Testing the processing speed of the LSST science pipeline tutorial with the latest version of the butler (Generation 3)
    - o Processing the data
        - As the generation 3 butler is in development I've had to debug some of the code within the LSST stack environment.
        - I managed to run most of the commands that where done in the LSST Science pipeline tutorial. However, I could get the last 3 commands to work.
        - I'm currently writing a report of all the debugs I had to do to get the code running and I'm planning on posting this on to the LSST community page
    - o Processing speed
        - Investigating the overall processing time when the data is stored locally or when the data is stored on Echo (S3) object store
        - To assess if its viable for the LSST IR FUSION data to switch from local storage to object store storage as possible solution for storage constraints it could face in the near future

- Multi-billion 20kB file upload test in ECHO object store
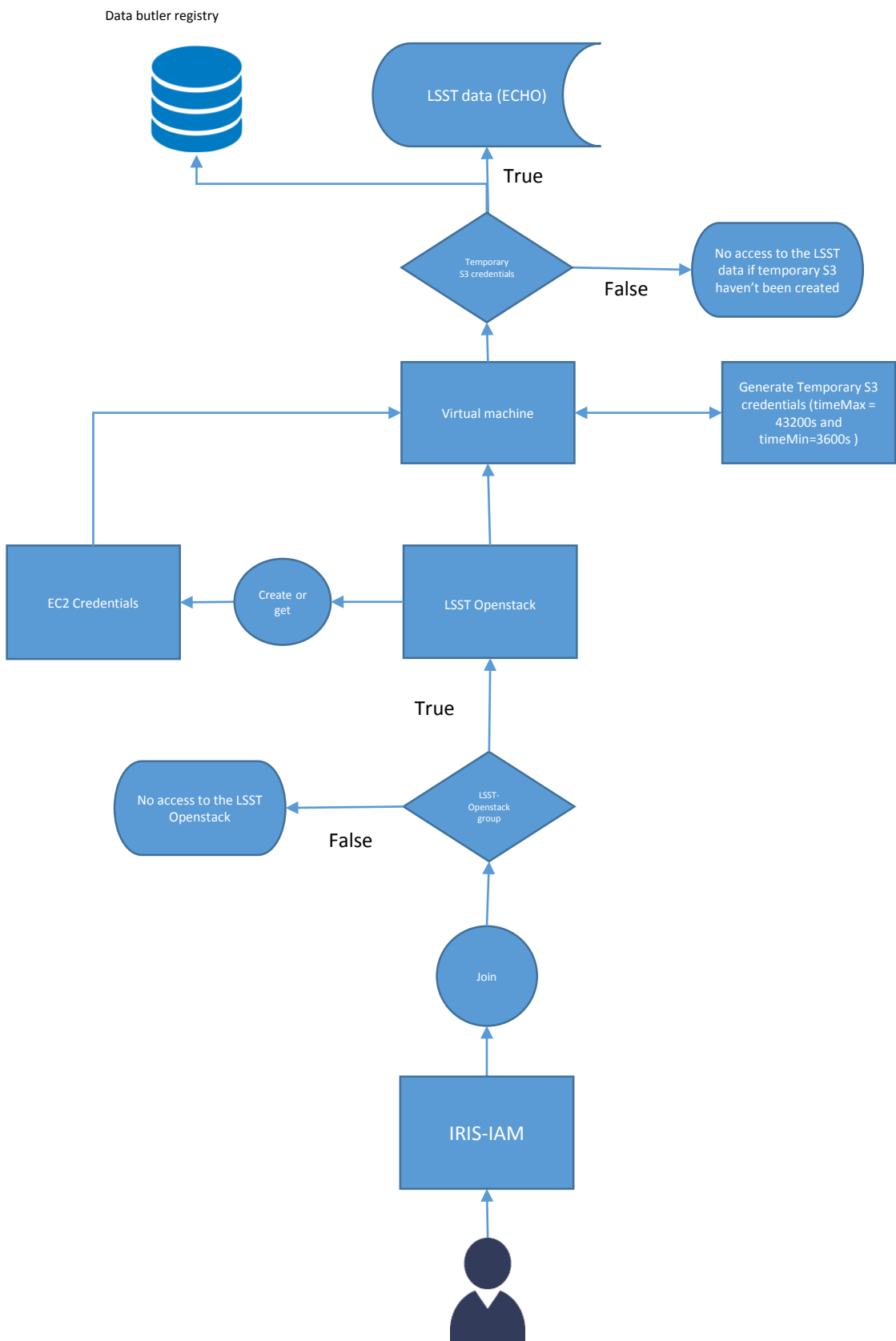   - o Waiting on the LSST representatives to give a update.

Astronomer (user, small analysis) use case 1 (EC2 Credentials)

In this workflow the user will log into IRIS-IAM using there organisations credentials and request to be part of the LSST Openstack group. Once they have accepted to the LSST Openstack. They can now go to the LSST Openstack webpage and login via IRIS-IAM. Now that the user is on the LSST Openstack they can generate or get EC2 credentials to be used to access the LSST data from ECHO from a virtual machine create from the LSST Openstack (The EC2 credentials acts as the S3 credentials using keystone integration (read access only)).

Data butler registry

LSST data (ECHO)

True

EC2 Credentials

No access to the LSST data if EC2 credentials haven't been generated

False

Virtual machine

EC2 Credentials

Create or get

LSST Openstack

True

No access to the LSST Openstack

False
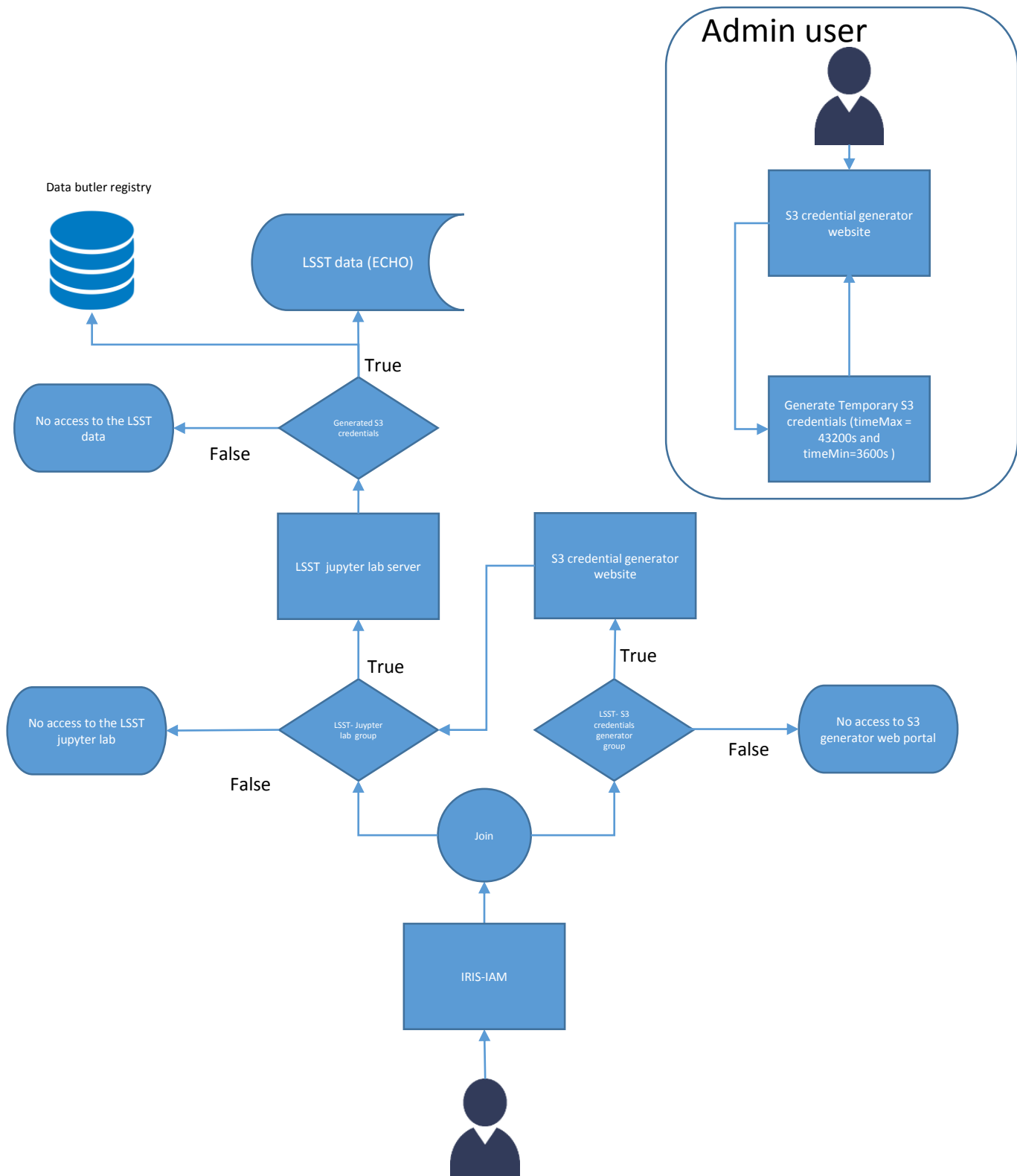
LSST-Openstack group

Join

IRIS-IAM

Astronomer (user, small analysis) use case 1 (Using EC2 Credentials to generate temporary S3 credentials using STSlite)

In this workflow the user will log into IRIS-IAM using there organisations credentials and request to be part of the LSST Openstack group. Once they have accepted to the LSST Openstack. They can now go onto the LSST Openstack webpage and login via IRIS-IAM. Now that the user is on the LSST Openstack they can generate or get EC2 credentials to be used to generate temporary S3 credentials using STSlite to access the LSST data (read access) from ECHO from a virtual machine create from the LSST Openstack (They can refresh their temporary credentials as much as they like whilst they are in the LSST openstack group).

Data butler registry

LSST data (ECHO)

True

Temporary S3 credentials

False

No access to the LSST data if temporary S3 haven't been created

Virtual machine

Generate Temporary S3 credentials (timeMax = 43200s and timeMin=3600s)

EC2 Credentials

Create or get

LSST Openstack

True

No access to the LSST Openstack

False

LSST-Openstack group

Join

IRIS-IAM

Astronomer (user, small analysis) use case (Web portal,Using EC2 Credentials to generate temporary S3 credentials using STSlite)

In this workflow the user will log into IRIS-IAM using there organisations credentials and request to be part of the LSST S3 credentials generator group and the LSST jupyter lab group. Once they have been accepted into both groups. They should firstly go onto the LSST Jupyter lab website and log via IRIS-IAM and set up their server's image(LSST Image with data butler). Once that's done they should now go to the S3 credentials generator website and log in via IRIS-IAM. On the website the user will be able to request how much time they need the S3 credentials for (min=3600s and max=43200s). The credentials are created by a backend user (e.g. admin or anyone of the LSST openstack). The backend user generates or gets EC2 credentials to be used to generate temporary S3 credentials using STSlite for the user. With these credentials the user will have access to the LSST data through the jupyter lab server.

Admin user

S3 credential generator website

Generate Temporary S3 credentials (timeMax = 43200s and timeMin=3600s)

Data butler registry

LSST data (ECHO)

True

No access to the LSST data

False

Generated S3 credentials

LSST jupyter lab server

S3 credential generator website

True

No access to the LSST jupyter lab

False

LSST- Juypter lab group

True

LSST- S3 credentials generator group

False

No access to S3 generator web portal

Join

IRIS-IAM

Astronomer (user, small analysis) use case (jupyter lab ,EC2 Credentials to generate temporary S3 credentials using STSlite)

In this workflow the user will log into IRIS-IAM using there organisations credentials and request to be part of the LSST jupyter lab group. Once they have been accepted into LSST jupyter lab group. They can now go onto the LSST Jupyter lab website and log via IRIS-IAM and set up their server's image(LSST Image with data butler). The credentials are complete dealt with by the backend user (admin, anyone on the LSST openstack). A script will be created to check if the user is part of the LSST jupyter lab group and then generate temporary credentials and pass those credentials to the jupyter lab server. This process will be continuously refreshed (time max =43200s) until the user is removed from the LSST jupyter lab group on IRIS-IAM. With these credentials the user will have access to the LSST data through the jupyter lab server

Data butler registry

Admin user

LSST data (ECHO)

Check if user is a member of the LSST-Juypter lab group

End

False

True

LSST jupyter lab server

Generate Temporary S3 credentials (timeMax = 43200s and timeMin=3600s)

Passes the Temporary credentials to the Jupyter lab server

No access to the LSST jupyter lab

LSST- Juypter lab group

True

False

Join

IRIS-IAM