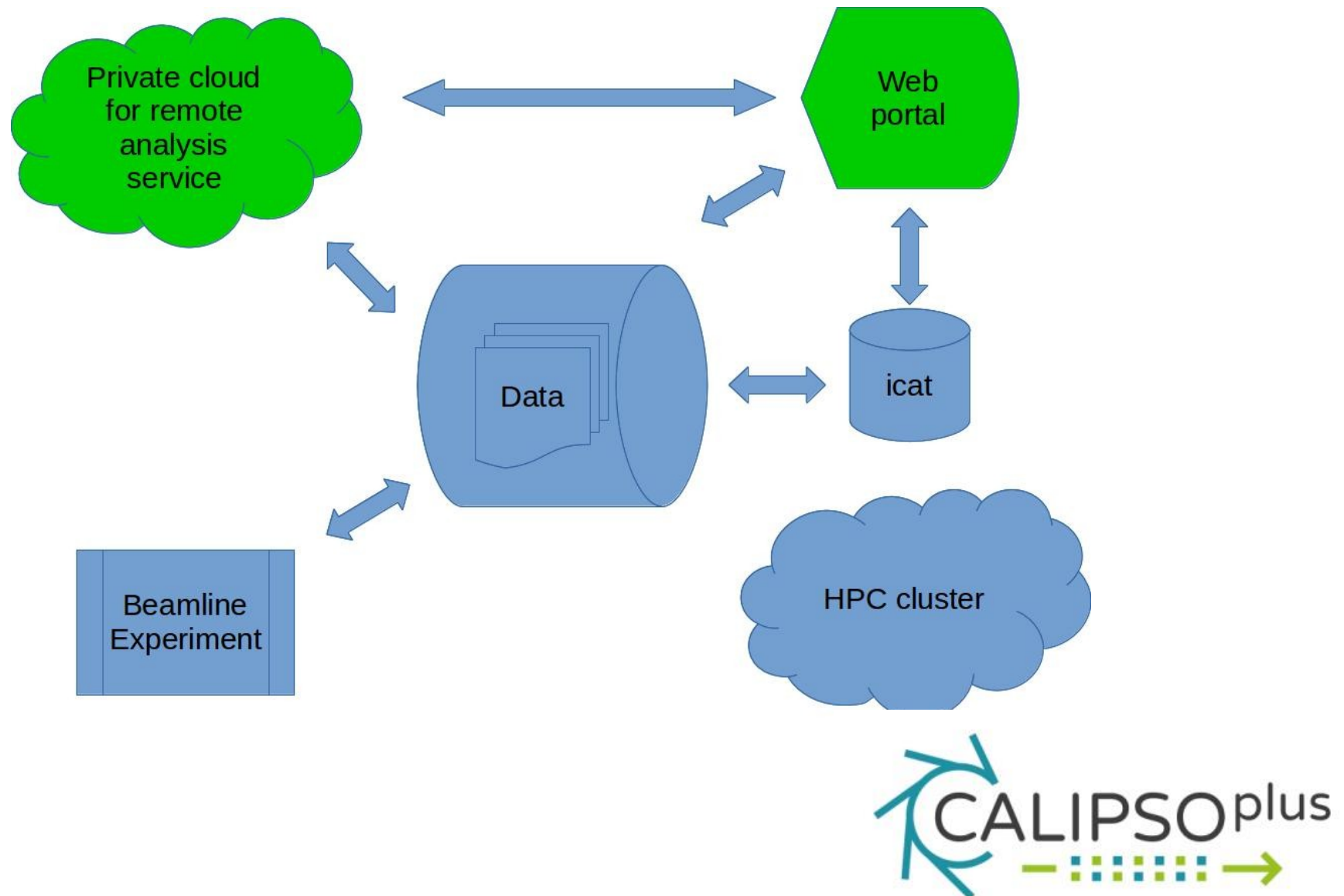




JRA2

Demonstrator of a Photon Science
Analysis Service

A Platform for Remote Data Analysis as a Service



Task 1 – Design a Platform for Remote Data Analysis as a Service

- Task leader - **ESRF**
- Effort - 18m
- Build on existing solutions
- Technologies – OpenStack, VMs, Docker, Umbrella
- Generic data analysis service(s) – Notebooks with JupyterHub / JupyterLab, H5Serv, ...



Task 1 – Platform to enable Generic Notebook service based on JupyterLab/Hub

The screenshot displays the JupyterLab web interface in a browser window. The address bar shows the URL `127.0.0.1:8888/lab`. The interface is divided into several panels:

- Files Panel (Left):** A sidebar showing the file structure of the JupyterLab environment, including folders like `design`, `examples`, `git-hooks`, `images`, `jupyterlab`, and `lib`.
- Code Editor (Center):** The main workspace for writing code. It contains a file named `Untitled.ipynb` with the following code:

```
In [1]: %matplotlib inline
import numpy as np
import matplotlib.pyplot as plt

N = 20
theta = np.linspace(0.0, 2 * np.pi, N, endpoint=False)
radii = 10 * np.random.rand(N)
width = np.pi / 4 * np.random.rand(N)
ax = plt.subplot(111, projection='polar')
bars = ax.bar(theta, radii, width=width, bottom=0.0)
for r, bar in zip(radii, bars):
    bar.set_facecolor(plt.cm.jet(r / 10.))
bar.set_alpha(0.5)
```

Below the code, a polar plot is displayed, showing a circular distribution of bars with varying colors and widths, representing a polar coordinate system.
- Launcher Panel (Right):** A panel showing the IPython version and its features. It includes a list of commands and their descriptions, such as `?quickref` for quick reference and `help` for Python's own help system.
- Terminal Panel (Bottom):** A terminal window showing system statistics and a list of running processes. The statistics include:
 - Tasks: 305 total, 1 running
 - Load average: 2.29 2.07 2.09
 - Uptime: 4 days, 21:59:11The process list shows the following details:

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
82374	fperez	31	0	2389M	2048	0	R	0.0	0.0	0:00.00	htop
1	root	0	0	0	0	0	0	0.0	0.0	0:00.00	(launched)
46	root	0	0	0	0	0	0	0.0	0.0	0:00.00	(syslogd)
47	root	0	0	0	0	0	0	0.0	0.0	0:00.00	(UserEventAgent)

Task 2 – Collect and Compare Offline Data Analysis Software

- Task leader - **PSI**
- Effort - 8m
- Use cases – SAXS, Tomography, Diffraction
- Software – To be defined
- Users – Industrial users are a good candidate



Task 3 – Implement DaaS platform on each site

- Task leader - **ESRF**
- Effort - 23m
- Sites – ESRF, PSI, ALBA, DLS, SOLEIL, ELETTRA
- Software – Stack defined in Task 1
- Users – Friendly users of Notebook service + H5Serv



Task 4 – Design and Implement DaaS platform portal

- Task leader - **ALBA**
- Effort - 16m
- Sites – ESRF, PSI, ALBA, DLS, SOLEIL, ELETTRA
- Software – Re-use existing solution
- Users – Friendly + Industrial users



Task 5 – Deploy and Package at least 2 Data Analysis software packages

- Task leader - **DESY**
- Effort - 20m
- Software – Identified by Task 2
- Users – Friendly + Industrial users

Task 6 – Extend and Deploy Umbrella as standard authentication service

- Task leader - **PSI**
- Effort - 18m
- Sub-tasks – Consolidate existing solution, integrate with eduGain, Jisc, solve sso security issues
- Extension – Integrate with ICAT



Task 7 – Test Use Cases with real Users

- Task leader - **ELETTRA**
- Effort - 6m
- Users – (non)Friendly + Industrial Users