The Octopus SCARF

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https://stfc.ukri.org
UK Research and Innovation

• Seven Research councils:
  – Arts and Humanities Research Council
  – Biotechnology and Biological Sciences Research Council
  – Economic and Social Research Council
  – Engineering and Physical Sciences Research Council
  – Medical Research Council
  – Natural Environment Research Council (Boaty McBoat Face)
  – Science and Technology Facilities Council

• Other councils:
  – Innovate UK
  – Research England
STFC

• Research and Grants
  – Astronomy
  – Particle Physics
  – Nuclear Physics
  – Space Science

• National Labs
  – Daresbury Laboratory, Cheshire
  – Rutherford Appleton Laboratory, Harwell, Oxfordshire
European HTCondor Workshop

Tuesday Sept 4th through Friday Sept 7th

More details and registration coming soon!
GridPP WLCG Tier1
~22000 slot HTCondor pool
~13PB disk storage in Ceph
~16PB disk storage in CASTOR
>30PB tape storage in CASTOR
https://www.scd.stfc.ac.uk
Diamond Light Source
3 GeV, 3rd Gen Light Source
~40 beamlines
X-ray to far-infrared radiation
http://diamond.ac.uk
ISIS Neutron & Muon Source

800MeV Proton accelerator
Tungsten targets → Neutrons
Graphite targets → Muons
+ MICE experiment

https://www.isis.stfc.ac.uk
RAL Space

Space research and technology development

210 space missions (incl. JWST)

https://www.ralspace.stfc.ac.uk
Central Laser Facility
Wide array of lasers for vast range of scientific applications
https://www.clf.stfc.ac.uk
Central Laser Facility

- ASTRA GEMINI
- VULCAN
- ARTEMIS
- ULTRA
- OCTOPUS

High-power, ultra-intense lasers for extreme conditions science & applications

Laser applications in the physical and life sciences (materials, chemistry, biology)
• National imaging facility with peer-reviewed, funded access
• Located in Research Complex at Harwell
• Cluster of microscopes and lasers and expert end-to-end multidisciplinary support
• Computing is predominantly a middleware challenge
  – “Looking forward to hardware bottleneck”
SCARF

• HPC cluster open to all STFC departments and Diamond to support scientists and researchers
  – ~700 nodes
  – ~14000 cores
  – ~52TB RAM
  – Infiniband interconnect

• Twenty-four nodes with GPUs
  – 12 with dual K40s (reserved for OCTOPUS)
  – 12 with dual K80s (free for all)

http://www.scarf.rl.ac.uk
Octopus Data

• Catalogued in ICAT  https://icatproject.org
• Browsed with TopCAT
• Jobs can run against data using the ICAT Job Portal
ICAT Job Portal
ICAT Job Portal

• Frontend for pre-defined analysis against datasets
• Written in Java
• Originally designed for direct submission
  – Connectors for Torque and LSF
  – Now need HTCondor, Slurm and OpenStack.
• DAaaS project called for a compute broker
  – Standardised interface for submission
  – Onward submission to batch farms and clouds
  – Sounds like HTCondor!
Compute Broker

- Essentially HTCondor-CE
  - Grid Universe
  - Some user translation “magic” for SCARF
  - Jobs get wrapped and use Singularity on SCARF
Right now...
Questions!

- Users want feedback from jobs
  - Want to see progress while running
  - Difficult to inspect job from outside
  - Tried side-channel access
  - Considering pilot jobs

- Any suggestions?